

The following papers were read :—

1. Additions to our Knowledge of the Fossorial Wasps of Australia. By ROWLAND E. TURNER, F.Z.S., F.E.S.

[Received February 16, 1909.]

(Plates XXXI. & XXXII.*)

The material for the following descriptions is nearly all in the British Museum collection, most of the Thynnidae having been received from Mr. H. M. Giles, and the Ceropalidae from the collection of the late Gilbert Turner. We may now assume that our material, though very incomplete, is fairly representative of the Fossorial Hymenoptera of Australia. It is most striking that of the species described up to the present time nearly one-half belong to the family Thynnidae, which is almost entirely without representatives in any other part of the world excepting South America.

The wingless condition of the females must operate against a wide distribution, but I think it quite possible that the family as it exists to-day is derived from less specialised and much more widely distributed ancestors of a form more nearly resembling the modern Scoliidae. The mouth-parts of the females in most Australian species are almost rudimentary, while in South-American species they are usually developed, so that the degree of specialisation in the two countries differs considerably. I am inclined to believe that the ancestors of the group have been exterminated in the northern continents and Africa by the keener competition existing on large continental areas, and that their descendants have survived on the smaller and more isolated land-areas of the south. In South America the species are very few in the tropical lowlands, but increase in number in the temperate and mountainous regions. In Australia they are most numerous in the south-west and decrease in number as they come into contact with a fauna of a more Oriental character in Queensland. I do not therefore look on the occurrence of the group in such distant localities as any proof of a land connection in the past, but rather regard the South American and Australian species as isolated survivors. The Mutillidae of Australia mostly seem generically distinct from those of other countries, and the Scoliid genus *Anthobosca* is elsewhere only represented by a few species in South America, South Africa, and Madagascar, but has been found fossil in Colorado. The Ceropalidae do not show any remarkable peculiarities, being nearly all representatives of wide-ranging genera. It is unfortunate that the old name for this family, Pompilidae, has to be superseded.

* For explanation of the Plates see p. 356.

Fam. MUTILLIDÆ.

EPHUTOMORPHA CONDONENSIS, sp. n.

♀. Head much narrower than the thorax, longer than broad, not much produced behind the eyes, rounded at the posterior angles, rather coarsely reticulate. Eyes situated near the middle of the lateral margin of the head, strongly convex and shining. The second joint of the flagellum nearly twice as long as the third. Thorax very coarsely reticulate; the anterior margin straight and produced into tubercles at the angles, more than half as wide again as the posterior margin, which is also produced into tubercles at the angles and obliquely truncate posteriorly; a large lateral tubercle on each side close to the middle of the thorax, behind which the thorax is sharply narrowed, a small rounded tubercle on each side rather nearer to the posterior angle than to the large lateral tubercle. First abdominal segment short, with a short petiole, punctured; second segment very coarsely reticulate, much broader than the first or third segments, convex, feebly depressed and much more finely reticulate on the middle; pygidial area slightly convex, very finely longitudinally striated. Ventral segments rather sparsely punctured. Intermediate and posterior tibiæ with a row of four spines on the outer margin.

Fusco-ferruginous; the head almost black; the vertex covered with long whitish pubescence; a spot at the apex of the first dorsal abdominal, one in the middle of the second segment, and a very small one on each of the following segments covered with whitish pubescence; the apical margins of the ventral segments fringed with pale fulvous pubescence.

Length 12 mm.

♂. Head punctured, a longitudinal carina on the front reaching the anterior ocellus, much narrower than the thorax, strongly rounded behind the eyes. Mandibles with a tooth on the inner margin before the apex; scape finely punctured and pubescent; all the joints of the flagellum except the first longer than broad, the third about half as long again as the second. Eyes strongly convex; posterior ocelli quite as far from each other as from the eyes. Thorax deeply punctured, the mesonotum reticulate in the middle; anterior margin of the pronotum almost straight, the angles slightly produced anteriorly; scutellum strongly convex and subtuberculate; median segment very coarsely reticulate, more than twice as broad as long, the posterior angles tuberculate, very steeply sloped posteriorly. First abdominal segment small with a short petiole; the second very large, coarsely punctured, the punctures more or less confluent longitudinally, somewhat flattened in the middle, with a low longitudinal median carina which does not reach the base or apex, the remaining segments very much narrower and finely punctured. Second ventral segment swollen and subtuberculate at the base. Three cubital cells and two recurrent nervures, the first received just before

the middle of the second cubital cell, the second at two-thirds from the base of the third cubital cell; radial cell truncate.

Fusco-ferruginous; head black, covered with grey pubescence; abdomen paler than the thorax, a tuft of white pubescence at the apical angles of the second and third segments, the dorsal segments with sparse black pubescence, white on the apical segment. Legs black. Wings hyaline on the basal third, the remainder fuscous; nervures black.

Length 13 mm.

Hab. Condon, North-West Australia (*H. M. Giles*). February.

♂ ♀ in cop.

Nearly allied to *rugicollis* Westw., which the female strongly resembles in shape and sculpture; but the second segment is somewhat broader in proportion. The male is easily distinguished from *rugicollis* ♂ by the tubercles at the apical angles of the median segment and the broader second abdominal segment. The colour is also very different in both sexes. The two species both occur in the Condon district.

EPHUTOMORPHA COCYTIA, sp. n.

♀. Black, clothed with long black hairs, the hairs at the apex of the second and third ventral segments greyish; the four apical ventral segments testaceous brown at the base. Mandibles smooth and shining, almost straight, with a small blunt tooth on the inner margin. Head narrower than the thorax, rounded at the posterior angles, strongly narrowed and produced anteriorly, finely punctured rugose with a few longitudinal striæ on the front. Scape punctured, clothed with long black pubescence; flagellum opaque, the two basal joints shining. Thorax very coarsely rugose, transverse on the anterior margin, about twice as long as the width on the anterior margin, slightly widening to before the middle, then gradually narrowing to the posterior margin, which is not more than two-thirds as wide as the anterior. Pleuræ shining and almost smooth. Second dorsal segment coarsely rugose; segments 3-5 punctured, the apical segment without hairs, finely longitudinally striated; second segment shallowly but rather broadly depressed in the middle. First ventral segment strongly carinated longitudinally; the second rugose in the middle, punctured at the base and apex, depressed on each side at the base, leaving a low carina in the middle between the depressed spaces, the apical margin very broadly depressed.

Length 14 mm.

Hab. Condon, N.W. A. (*H. M. Giles*), 3 ♀. Cossack, W. A. (*Walker*), 1 ♀.

In specimens which have lost some of the pubescence on the head, and the sculpture shows more plainly, there can be seen a carina on each side starting from the antennal tubercle and arching toward the eye, and a short transverse carina at the base of the clypeus. The second joint of the flagellum is nearly half as long

again as the third. The eyes are large and prominent, situated nearer to the occiput than to the base of the mandibles.

EPHUTOMORPHA GILES, sp. n. (Plate XXXII. figs. 1 ♂, 2 ♀.)

♀. Mandibles slightly bent at the base, straight and pointed at the apex, with a strong tubercle on the outer margin near the base, the inner margin apparently without teeth. Head much narrower than the thorax, rounded at the posterior angles, deflexed and narrowed anteriorly, finely and shallowly punctured, a curved carina on each side running from the antennal tubercle nearly to the eye; the head below the carina strongly depressed. Scape punctured and clothed with long greyish-white pubescence; the second joint of the flagellum nearly half as long again as the third. Eyes large, strongly convex, situated much nearer to the occiput than to the base of the mandibles. Thorax very coarsely reticulated, pro- and mesopleuræ coarsely punctured; the thorax pyriform, straight on the anterior margin, narrowed and steeply sloped posteriorly, strongly convex. First abdominal segment short, shining, sparsely and finely punctured, much narrower than the second, which is strongly raised at the base above the first, shining and sparsely but very coarsely and deeply punctured, with a very large, cordiform, shallow depression in the middle, more finely punctured; the third, fourth, and fifth segments finely and closely punctured; the apical segment without hairs, longitudinally striated. First ventral segment with a strong carina; second segment subtuberculate at the base in the middle and slightly depressed on each side, very coarsely but rather sparsely punctured, the apical margin strongly and broadly depressed; the remaining segments delicately reticulate at the base, closely and finely punctured at the apex.

Black, clothed with greyish pubescence, longest and closest on the head and sides of the thorax and abdomen and everywhere interspersed with long, erect, black hairs; a patch of silver-white pubescence at the apex of the five basal abdominal segments, that on the first the largest and with the hairs directed forward; the depression on the second dorsal segment clothed with grey pubescence.

Length 14-18 mm.

♂. Mandibles a little curved, with a feeble tooth on the inner margin, pointed at the apex. Head small, much narrower than the thorax, closely and finely punctured and covered with greyish pubescence; strongly rounded behind the eyes, without distinct posterior angles. Eyes large and convex, situated not very far from the base of the mandibles; the ocelli small, the two posterior ocelli much nearer to each other than to the eyes. Scape punctured above and clothed with long pubescence, shining beneath and deeply hollowed; the second joint of the flagellum much shorter than the third. Thorax closely and finely punctured, the pronotum slightly narrowed anteriorly and rounded at the angles, clothed with long and very pale fulvous pubescence, the pubescence

on the mesonotum and scutellum shorter and black; the scutellum subtriangular; the tegulae smooth, with a few punctures near the apex. Median segment very coarsely reticulated, very steeply sloped posteriorly. Abdomen finely and closely punctured, with long black pubescence on the side; the first segment short, much narrower than the second, moderately constricted at the apex; the apical segment smooth and shining, with a low median carina, rather broadly truncated at the apex. Radial cell broadly truncated at the apex; three cubital cells, the first recurrent nervure received beyond the middle of the second cubital cell, the second less distinct and interstitial with the third transverse cubital nervure. Second ventral segment tuberculate at the base beneath.

Black; a small pointed patch of white pubescence at the apex of each dorsal segment, except the first and seventh. Wings dark fuscous, nervures black.

Length 17 mm.

Hab. Carlindia, North-West Australia, ♂ ♀ in cop.; Strelley River, N.W. A., 2 ♀ (*H. M. Giles*).

The female may be readily distinguished from other species of the genus by the large depression on the second dorsal segment. The shape approaches very nearly to the last species (*cocytia*).

EPHUTOMORPHA PERELEGANS, sp. n. (Plate XXXII. fig. 3, ♀.)

♀. Head closely and not very finely punctured, nearly as broad as the thorax, broadly rounded behind the eyes, without posterior angles, a little narrowed anteriorly; an oblique carina on each side reaching from the antennal tubercle to the eye. Antennae as long as the thorax, the third joint of the flagellum as long as the second. Eyes large and moderately convex, situated nearer to the posterior margin of the head than to the base of the mandibles. Thorax very coarsely punctured, the punctures confluent longitudinally on the posterior half, not more than one-quarter as long again as the greatest breadth, narrowed gradually from the middle and nearly half as broad again on the anterior as on the posterior margin, the anterior margin slightly arched, obliquely sloped posteriorly. Pleurae almost smooth. Abdomen ovate, the basal segment short and not very narrow; finely and closely punctured; the pygidial area finely longitudinally striated and rather narrowly rounded at the apex.

Ferruginous red, with sparse erect pubescence, black on the abdomen, dark brown on the head and thorax; the abdomen, except the basal segment, and the nine apical joints of the flagellum black. A broad longitudinal band of whitish pubescence on the middle of the dorsal surface of the abdomen from the base of the second segment to the apex of the fifth; the pubescence on the sides and ventral surface of the abdomen sparse and whitish.

Length 5 mm.

Hab. Townsville, Q. (*F. P. Dodd*).

Somewhat allied to *E. aurigera* Bingh., from the same locality, but the thorax is much shorter and broader and also more coarsely sculptured in the present species. It is remarkable that many species were collected by Mr. Dodd at Townsville which are not represented in the extensive collections of the Mutillidæ formed by Mr. Gilbert Turner at Mackay and Cairns. The range of many species, at all events from north to south, must be extremely limited.

EPHUTOMORPHA LABECULATA, sp. n.

♀. Head closely and rather coarsely punctured, a little broader than the thorax, short and narrowed behind the eyes, without distinct angles, narrowed anteriorly; the carinæ from the antennal tubercles ill-defined and not reaching the eyes. Second joint of the flagellum distinctly longer than the third. Eyes large and very strongly convex, nearer to the occiput than to the base of the mandibles. Thorax finely and very closely punctured-rugose, broadest in the middle, a little longer than the greatest breadth, the anterior margin straight, about one-quarter broader than the posterior margin, the angles not prominent; the posterior truncation almost vertical, the lateral margins feebly serrate. Abdomen ovate, very finely and closely punctured, the pygidium very finely longitudinally striated.

Black, with sparse, erect, grey pubescence; the apex of the first dorsal segment of the abdomen testaceous; the head and apex of thorax sparsely covered with recumbent silvery pubescence, an oval spot of silver pubescence on each side of the second dorsal segment, a transverse band at the apex of the same segment, and a broad longitudinal band on the middle of the third, fourth, and fifth segments also of silver pubescence.

Length 5 mm.

Hab. Townsville, Q. (*F. P. Dodd*), June.

EPHUTOMORPHA ANCHORITES, sp. n.

♀. Head subrectangular, slightly rounded at the posterior angles, broader than long, as broad as the thorax, evenly but not very closely punctured; a carina on each side from the antennal tubercle not reaching the eye. Second joint of the flagellum distinctly longer than the third; the flagellum rather stout in the middle, the joints longer than broad. Eyes convex, not very large, situated a little nearer to the base of the mandibles than to the occiput. Thorax longer by one-third than the breadth on the anterior margin, the sides nearly parallel, slightly narrowed behind the middle, almost vertically truncate posteriorly, the anterior margin straight, coarsely reticulate; the pleuræ almost smooth. Abdomen subovate, the second segment evenly but not very closely punctured, the remaining segments much more finely punctured; the basal segment very short, depressed below the

base of the second segment. Apical dorsal segment deflexed, elongate triangular, and finely longitudinally striated.

Entirely ferruginous brown, with sparse grey pubescence; the mandibles and pygidial area darker; a very small patch of silver pubescence in the middle of the apical margin of the first and second dorsal segments.

Length 6 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*).

Well distinguished from most species of the genus by the broad head and thorax; in most of the species of the genus in which the head is broad and rectangular, the thorax is very much narrower than the head.

Fam. THYNNIDÆ.

The material in this family dealt with here is mainly derived from the splendid collection sent by Mr. H. M. Giles from South-Western Australia to the British Museum. Some other species described are from the collection of the Berlin Museum and from collections sent to me by Messrs. G. A. Waterhouse and R. Illidge. Mr. Giles has also furnished valuable information as to the habits of the species. He says that, in spite of the minute mouth-parts, the females do take food, though exclusively liquid. This, he has observed in many species, is disgorged by the males and placed in the mouth of the female, which is carried by the male for some hours. The larger females also help themselves. In a female examined for me by Mr. W. Wesché there was no trace of pollen, though the specimen had been taken on *Leptospermum*-blossom by Mr. Illidge; whereas in the South-American female *Spilothynnus bituberculatus* Turn. a good deal of pollen was to be found, showing that the more normal mouth of the South-American females is associated with a difference in feeding-habits. In several cases Mr. Giles captured specimens cross-paired, males of the same species being taken carrying widely different females. There can here be no question as to any mistake in the observation, Mr. Giles being a most careful observer. Professor Dahl observed in New Britain that the female of *Thynnus serriger* Sharp is to be found on leaves with the mandibles wide open, probably for the purpose of seizing the male. I am inclined to think that the male may be used in this way as a means of transport, and that the strongly developed claspers may be used in carrying the female without coupling actually taking place in cases where the two are of different species. On the other hand, occasional cross-pairing among the more nearly allied species is not wholly improbable. Mr. Giles has also observed a male of one species going into a *Bembex*-burrow and returning coupled with a female. On digging up more *Bembex*-burrows he succeeded in finding another female of the same species, thus showing that my suggestion that some of the smaller species are parasitic on *Bembex* is almost certainly correct.

RHAGIGASTER UNICOLOR Guér. st. LYELLI, nom. n.

Rhagigaster unicolor Guér. st. *mandibularis* Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 217 (1907) (nec *R. mandibularis* Westw.).

♂. The second cubital cell is only about three-fifths of the length of the third on the radial nervure, whereas in typical *unicolor* it is fully four-fifths of the length.

It is possible that this may prove to be a sufficiently distinct species, but I have not seen the two forms from the same locality.

A pair taken *in copulâ* by Mr. G. Lyell at Gisborne, Victoria, in February.

RHAGIGASTER FUSCIPENNIS Sm.

Rhagigaster fuscipennis Sm. Descr. n. sp. Hym. p. 175 (1879), ♂ (nec Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 218, 1907).

Rhagigaster gracilior Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 223 (1907), ♂ ♀.

My identification of Smith's species was mistaken; it is therefore necessary to give a name to the species described by me as *fuscipennis* Sm.:—

RHAGIGASTER NIGRITULUS, nom. n.

Rhagigaster fuscipennis Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 218 (1907), ♂ ♀ (nec Smith).

RHAGIGASTER ANALIS Westw.

Rhagigaster analis Westw. Arc. Ent. ii. p. 106 (1844), ♀.

Rhagigaster tristis Sm. Cat. Hym. B. M. vii. p. 63. n. 13 (1859), ♂.

Rhagigaster nitidus Sm. Cat. Hym. B. M. vii. p. 63. n. 16 (1859), ♀.

Several pairs taken *in cop.* by Mr. H. M. Giles in the neighbourhood of Perth. The female is a true *Rhagigaster*, having the lateral grooves on the head; but the male is without the frontal carina between the eyes which is usually present in males of that group. This shows plainly that my genus *Rhytidogaster* cannot stand, there being no sufficiently distinguishing points between the males. In some of the males sent by Mr. Giles the second recurrent nervure is interstitial with the second transverse cubital nervure, and the size varies from 12 to 15 mm.

RHAGIGASTER CINERELLUS, sp. n.

♂. Mandibles bidentate, the inner tooth very large; clypeus very short and broad, not produced in the middle, the anterior margin almost straight, convex, with a carina from the base to the middle, obliquely and very broadly triangularly depressed from the middle to the apex, the margins of the oblique space and the apical margin raised, forming low carinæ. Antennæ inserted low down, on the sides of the clypeus, about as long as the thorax and

median segment combined, rather stout, the apical joints slightly arcuate, the prominence between the antennæ not developed. Head rather coarsely punctured, more finely and closely on the front than on the vertex; no transverse carina, but the front is sharply depressed a little in front of the anterior ocellus. Posterior ocelli about two and a half times as far from the eyes as from each other. Thorax closely punctured; the scutellum rather narrowly truncate at the apex, convex. Median segment rather short, more finely punctured. Abdomen fusiform, shallowly and not very closely punctured, the punctures rather larger than on the thorax; the segments slightly constricted at the base, with a sparse fringe of short white hairs on the apical margin. Seventh dorsal segment more deeply and coarsely punctured, rounded at the apex. Hypopygium ending in a recurved spine which does not reach far beyond the dorsal segment, without lateral spines. Second recurrent nervure received at the base of the third cubital cell, not quite interstitial with the second transverse cubital nervure; second abscissa of the radius a little shorter than the third.

Black; the legs fuscous. Wings pale fusco-hyaline, nervures fuscous.

Length 13 mm.

Hab. Cape York, Q. (*Daemel*).

Type in Berlin Museum.

Daemel's localities are not always accurate, and may have to be corrected in the future.

The present species is very distinct, the very broad short clypeus and strongly bidentate mandibles distinguishing it from other species of the genus. The fusiform abdomen and the short hypopygium point to a connection with the next-described species, *interstitialis*.

RHAGIGASTER INTERSTITIALIS, sp. n.

♂. Clypeus short and broad, opaque and punctured, clothed with long grey hairs, with a low carina from the base, branching in the middle and forming a Λ -shaped carina which reaches the anterior margin. Antennæ as long as the thorax, stout and of almost even thickness throughout. Head rugose, broader than the pronotum, with an oblique carina above the base of each antenna; without a transverse frontal carina. Thorax and median segment finely and closely punctured, most closely on the median segment; mesopleuræ rugose. Pronotum a little narrowed anteriorly, the angles not prominent. Scutellum almost triangular, very narrowly rounded at the apex, the sides strongly depressed. Median segment shorter than the pronotum, subtruncate or very steeply sloped posteriorly, the posterior surface striolated. Abdomen as broad as the thorax, stout, about one-third longer than the head and thorax combined, very finely and closely punctured; segments 2-5 with a depressed transverse line near the base and a low transverse carina emarginate posteriorly in the middle

near the apex. Seventh dorsal segment very narrow at the apex. Hypopygium ending in a recurved spine, shortly and less strongly recurved than is usual in the genus. Second recurrent nervure interstitial with the second transverse cubital nervure; the second cubital cell about two-thirds as long as the third on the radial nervure; the division of the first cubital cell clearly marked.

Opaque black; the spines of the tibiæ and tarsi testaceous. Wings fusco-hyaline, nervures black, stigma fuscous.

Length 15 mm.; exp. of wings 24 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*). April.

A very distinct species, shorter and more stoutly built than is usual in the genus. The female will probably prove to belong to *Rhytidogaster* Turn. rather than to *Rhagigaster*; but the males of the two groups are not distinguishable with any certainty, and I think *Rhytidogaster* must sink.

RHAGIGASTER CORRUGATUS, sp. n. (Plate XXXI. figs. 1 ♂, 2 ♀.)

♂. Clypeus finely and closely punctured at the base and on the sides, with a short longitudinal carina from the base, which branches before the middle into two almost obsolete carinæ, these enclosing with the apical margin a shining triangular space marked with a few large and sometimes confluent punctures; the apical margin almost straight, very broadly and feebly emarginate. Antennæ scarcely as long as the thorax without the median segment, of almost even thickness throughout, inserted further from each other than from the eyes. Vertex shining, rather strongly punctured, with an almost obsolete longitudinal carina behind the ocelli; front coarsely rugose, with an arched carina not extending to the eyes below the anterior ocellus and a broadly V-shaped carina between the antennæ, the branches not extending to the arched carina. Thorax closely and rather strongly punctured; the pronotum nearly as broad as the head; the anterior margin straight and raised, with a shallow groove behind it, the anterior angles moderately prominent. Scutellum subtriangular, narrowly truncate at the apex. Median segment rounded, finely and closely punctured. Abdomen elongate, nearly half as long again as the head and thorax combined, shining, strongly but not very closely punctured, much more closely than in *R. unicolor* Guér.; the segments strongly constricted near the base, the base of the segments where visible closely and very minutely punctured. First ventral segment with a small acute tubercle at the base. Seventh dorsal segment sharply depressed at the apex and produced into a small, flattened, smooth plate, rounded at the apex; the hypopygium not extending much beyond the dorsal process, forming a very sharply recurved spine with a minute spine on the upper surface and without lateral spines at the base. Second recurrent nervure received close to the base of the third cubital cell, nearer the base than in *R. unicolor*.

Black, with sparse whitish pubescence; the pubescence on the head cinereous. Wings very pale fusco-hyaline, faintly flushed

with purple, the radial cell narrowly fuscous along the costa; nervures black.

Length 17 mm.

♀. Mandibles bidentate, the inner tooth short and blunt. Maxillary palpi short, six-jointed; labial palpi four-jointed; labrum transverse and strongly ciliated, borne on a narrow petiole. Clypeus shining and almost smooth, the anterior margin truncate, a carina from the base almost reaching the apex. Head quadrate, slightly rounded at the posterior angles, very coarsely longitudinally rugose. Thorax and abdomen very coarsely longitudinally striated, the striae most regular on the abdomen, more broken and irregular on the median segment; the sixth dorsal segment and the ventral surface sparsely punctured. Pronotum more than half as broad as the head, rectangular, half as broad again as long, the mesopleuræ showing a distinct dorsal surface on each side of the scutellum. Median segment as long as the pronotum, broadened from the base to the apex, obliquely truncate posteriorly, the surface of the truncation punctured. Abdominal segments almost smooth at the base when extended, the first ventral segment with a small acute tubercle at the base; the sixth dorsal segment shallowly emarginate at the apex and not quite reaching the apex of the ventral segment.

Black; the flagellum, the mandibles (except at the apex), the upper surface of the head from the base of the antennæ to the posterior margin, the tarsi, and the spines of the tibiæ dull fulvo-ferruginous.

Length 11–13 mm.

Hab. Woodford, N.S.W. (*G. A. Waterhouse*), ♂ ♀ in cop. Victoria (*Berlin Museum*), ♀.

Described from three males and three females.

This remarkable species is very near *R. unicolor* Guér. in the male sex, except in the anal segment. But the female is completely distinct, and shows that my genus *Rhytidogaster* cannot be maintained as distinct from *Rhagigaster*, unless by the character of the oblique grooves on the head of the female, which are wanting in this species.

RHAGIGASTER CASTANEUS Sm.

Rhagigaster castaneus Sm. Cat. Hym. B. M. vii. p. 63. n. 15 (1859), ♀.

♂. Clypeus with a prominent longitudinal carina from the base to the middle, finely rugulose, shining at the apex, and rather narrowly truncate. Head rugose on the front, coarsely punctured on the vertex; the interantennal carina well defined, V-shaped; a low, frontal, longitudinal carina not reaching the anterior ocellus; no transverse carina between the eyes. Pronotum as broad as the head, closely and not very coarsely punctured, the anterior margin straight and strongly raised, the angles slightly prominent. Mesonotum, mesopleuræ, and scutellum coarsely punctured-rugose; the scutellum triangular, almost pointed at the apex. Median segment

finely and very closely punctured, rounded at the sides, short and steeply sloped posteriorly. Abdomen elongate, the segments constricted near the base, the extreme base very finely punctured, the apical portion more sparsely and coarsely punctured, with a large smooth patch on each side near the apical margin; the seventh dorsal segment with a tubercle on each side at the apex, prolonged between the tubercles into a short narrow process, which is as broad as long and truncate at the apex. Hypopygium ending in a long recurved spine. The position of the second recurrent nervure is rather variable, being received by the third cubital cell from one-fifth to one-quarter from the base; the division of the first cubital cell is well marked, but not quite complete.

Black, the two apical abdominal segments ferruginous red. Wings hyaline, slightly tinted with fuscous, nervures black. The ventral segments are fringed at the apex with white pubescence.

Length 14–15 mm.

Hab. South Perth, W. A. (*H. M. Giles*), ♂ ♀ in cop.

“On *Leptospermum* bloom. Not common” (*Giles*).

RHAGIGASTER ACULEATUS SAUSS.

Rhagigaster aculeatus Sauss. Reise Novara, Zool. ii. Hym. i. p. 113 (1867), ♂.

Rhytidogaster aculeatus Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 235 (1907), ♂.

♀. Differs from the female of *aculeatus* st. *acutangulus* Turn. in the shorter and broader head, which is rather less than half as long again as broad in the typical form, and considerably more than half as long again as broad in st. *acutangulus*. The mandibles have a short blunt tooth on the inner margin.

Hab. Woodford, N.S.W. (*G. A. Waterhouse*), ♂ ♀ in cop.

EIRONE SCHIZORHINA, sp. n.

♂. Clypeus convex, narrowly produced and strongly porrect, deeply and narrowly emarginate at the apex, the angles of the emargination produced into short spines; closely and finely punctured; with an obscure median carina from the base to the middle. Head and pronotum shining, shallowly and not very closely punctured, the head slightly narrowed behind the eyes, but broader posteriorly than the pronotum. Antennae inserted as far from each other as from the eyes; the interantennal prominence very small and low, V-shaped; a small longitudinal depression halfway between the anterior ocellus and the base of the clypeus; antennae a little longer than the thorax without the median segment, the apical joints slightly arcuate. Anterior margin of the pronotum strongly raised; mesonotum and scutellum closely punctured. Median segment smooth and shining at the base, finely and very closely punctured rugulose beyond the shining area which is divided by a very short longitudinal sulcus,

the segment gradually sloped posteriorly, not truncate. Abdomen rather shorter than the head, thorax, and median segment combined, tapering slightly at the extremities, the segments rather closely punctured at the base, smooth and shining at the apex. Hypopygium rounded, not projecting beyond the dorsal segment. Third abscissa of the radius longer than the second; second recurrent nervure received just beyond one-quarter from the base of the third cubital cell.

Black, with sparse grey pubescence; mandibles, tegulæ, femora, tibiæ, and tarsi ochreous. Wings hyaline, nervures fuscous.

Length 10 mm.

Hab. New South Wales (*Staudinger*), 2 ♂.

Type in Berlin Museum.

This species approaches *lucidus* Sm., but may easily be distinguished by the remarkable form of the clypeus.

EIRONE RUFICORNIS Sm.

Thynnus (Agriomyia) ruficornis Sm. Cat. Hym. B. M. vii. p. 34 (1859), ♂.

Eirone ruficornis Turn. Proc. Linn. Soc. N.S.W. xxxii. p. 265 (1907), ♂.

♀. Head rectangular, very slightly rounded at the posterior angles, longer than broad, very sparsely and minutely punctured, with a short, longitudinal, frontal sulcus; the mandibles stout, blunt at the apex, bidentate; antennæ fully half as long again as the head. Thorax very sparsely punctured; the pronotum longer than broad, very slightly narrowed anteriorly, a little shorter than the median segment; scutellum rather broader than long, the mesopleuræ showing a distinct dorsal surface on each side of it; the median segment longer than broad and slightly broadened posteriorly. Abdomen elongate, subcylindrical, sparsely and finely punctured, the punctures more or less elongate; the basal segment shorter than the second, almost as broad at the base as at the apex; the pygidium without a carina, rounded at the apex.

Shining black; the prothorax and median segment ferruginous; legs, antennæ, mandibles, and pygidium fusco-ferruginous.

Length 7 mm.

Hab. Claremont, W. A. (*H. M. Giles*). December. ♂ ♀ in cop. "On *Eucalyptus* bloom."

EIRONE FERRUGINEICORNIS, sp. n. (Plate XXXI. fig. 3, ♂.)

♂. Clypeus strongly convex at the base, raised and subcarinate in the middle, flattened towards the apex, produced anteriorly and rather narrowly truncate on the apical margin. Head and thorax shining and rather sparsely punctured; the head broadly emarginate posteriorly, not narrowed behind the eyes; antennæ as long as the thorax without the median segment, filiform, a little more slender towards the apex. Pronotum scarcely narrowed anteriorly, the anterior margin slightly raised; propleuræ

shining; mesopleuræ closely punctured. Scutellum narrowly truncate at the apex. Median segment granulated, short, abruptly truncate posteriorly, the surface of the truncation punctured rugulose. Abdomen fusiform, shorter than the head and thorax combined, shining and very minutely punctured; the seventh segment rounded at the apex, smooth; the hypopygium not prominent, simple, rounded at the apex. Third cubital cell longer than the second on the radial nervure, receiving the second recurrent nervure just before one-third from the base. The division of the first cubital cell is not marked.

Black; the antennæ, mandibles, prothorax, and legs ferruginous; the apex of the clypeus pale yellow. Wings hyaline; the stigma ferruginous; nervures pale testaceous, almost colourless.

Length 8 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*).

EIRONE MONTIVAGA, sp. n.

♂. Clypeus convex, with a carina from the base not reaching the apex, without a triangular truncation at the apex, closely and microscopically punctured. Antennæ shorter than the thorax and median segment combined, inserted nearer to each other than to the eyes, the apical joints slightly arcuate; the interantennal prominence V-shaped and touching the base of the clypeus. Head shining, closely and not very finely punctured, the posterior ocelli more than twice as far from the eyes as from each other. Thorax rather more finely punctured than the head, especially on the pronotum, which is almost smooth, with the anterior margin raised. Scutellum nearly triangular, narrowly rounded at the apex. Median segment no longer than the pronotum, obliquely sloped posteriorly, finely aciculate, closely punctured on the posterior slope. Abdomen slightly fusiform, shorter than the head and thorax combined, shining, minutely punctured, the apical segment rounded at the extremity, the hypopygium rounded and ciliated, not projecting beyond the dorsal plate. Claspers broad and short, the apex with a fringe of long curved hairs. Second cubital cell a little more than half as long as the third on the radial nervure.

Black; the anterior margin of the clypeus, two minute spots between the antennæ, the anterior margin of the pronotum broadly interrupted in the middle, an oblique line on each side at the posterior angle of the pronotum, and the spines of the tibiæ white. Wings hyaline, faintly iridescent, nervures black.

Length 6 mm.

♀. Head rectangular, nearly one-third as long again as broad, slightly rounded at the posterior angles, smooth and shining; the eyes very small, ovate, not touching the base of the mandibles. Thorax and median segment very sparsely punctured; the pronotum a little shorter than the median segment, slightly narrowed anteriorly; scutellum nearly half as long as the

pronotum, the mesopleuræ showing a distinct dorsal surface on each side of it. Median segment twice as long as the breadth at the base, flattened above and slightly broadened from the base to the apex. Abdomen shining, shallowly and finely punctured, the punctures elongate; first segment vertically truncate at the base, not very short, not very narrow at the base; the pygidium pointed. The abdomen is broadened in the middle, not cylindrical.

Entirely castaneous brown.

Length 5 mm.

Hab. Woodford, N.S.W. (*G. A. Waterhouse*), ♂ ♀ in cop.

Described from two pairs.

Nearest to *vitripennis* Sm., but the clypeus of the male is without the triangular truncation at the apex, and the abdomen of the female is shorter and less cylindrical, in addition to other differences.

TACHYNOMYIA DISJUNCTA, sp. n.

♂. Clypeus narrowly produced and truncate at the apex, very coarsely punctured, the apical margin smooth. Cheeks at the base of the mandibles produced into an acute spine. Head rugose; the interantennal prominence very broadly rounded and feebly bilobed, divided by a short, obscure, longitudinal carina. Antennæ as long as the head, thorax, and median segment combined, inserted nearer to each other than to the eyes, the apical joints slender and arcuate. Ocelli very close together, the posterior ocelli about three times as far from the eyes as from each other; the head strongly concave beneath, the lateral fringe of hairs very long and grey. Apical joints of the maxillary palpi not very long or slender. Posterior margin of the head slightly arched, not emarginate. Pronotum shining, almost smooth, much narrower than the head, the anterior margin raised. Thorax and median segment closely punctured, finely on the median segment, more strongly on the mesonotum; the scutellum large, broadly truncate at the apex. Abdomen broadened from the base, closely and deeply punctured, much more sparsely on the ventral than on the dorsal surface; the second ventral segment very deeply separated from the first and produced at the base into a large and prominent tubercle. Hypopygium broadly rounded, with an acute apical spine.

Black; the mandibles, the apex of the clypeus, and the apex of the interantennal prominence very narrowly whitish yellow; the apex of the tegulæ, the apex of the femora, the tibiæ, tarsi, the second and third ventral segments, and the apical margin of the first, second, and third dorsal segments very narrowly dark ferruginous. Wings hyaline, very faintly clouded with fuscous, nervures black, stigma fuscous.

Length 14 mm.

♀. Head rather thick, subrectangular, more than half as

broad again as long, slightly rounded at the posterior angles, shining, with large scattered punctures, the clypeus with a carina. Thorax and median segment shining, very sparsely punctured; the pronotum narrower than the head, half as broad again on the anterior margin as long, narrowed posteriorly, no broader on the posterior margin than long; scutellum short, much broader than long. Median segment as long as two-thirds of the pronotum, slightly broadened posteriorly and sharply truncate. Abdomen broader than the thorax, sparsely punctured, very finely at the base of the segments, more coarsely at the apex; the first segment vertically truncate at the base, the dorsal surface finely longitudinally striated between deep scattered punctures; the second segment finely and closely longitudinally striated, the apical margin feebly raised, with a narrow groove before it. Pygidium broad, not truncate or compressed, longitudinally striated, broadly rounded at the apex, the dorsal plate narrowed at the extreme apex. Ventral surface shallowly but coarsely punctured, most finely on the fifth segment. A minute spine on the mesopleuræ close to the base of the intermediate coxæ. Tarsal unguis bidentate.

Fusco-ferruginous; the head (except the mandibles and antennæ), the scutellum, median segment, and stains near the apex of the third, fourth, and fifth dorsal abdominal segments black.

Length 13 mm.

Hab. South Perth, W. A. (*H. M. Giles*). November. ♂ ♀ in cop.

TACHYNOMYIA AURICOMATA, sp. n.

♂. Head punctured-rugose, clothed with long golden pubescence, thin on the vertex, close on the clypeus, and forming the usual fringe of long curved hairs on the cheeks; the clypeus slightly convex and more broadly truncate at the apex than in most of the allied species. Antennæ as long as the thorax and median segment combined, the apical joints feebly arcuate, inserted nearer to each other than to the eyes; the interantennal prominence bilobed. Pronotum very shallowly punctured, the remainder of the thorax and the pleuræ more closely and deeply punctured; the anterior margin of the pronotum raised, much narrower than the head; thorax with sparse golden, pleuræ with white pubescence. Median segment punctured-rugulose. Abdomen shining, fusiform, very shallowly punctured, segments 2-4 with a faintly raised curved mark on each side near the apex; the first segment narrowed at the base, with a longitudinal sulcus from the base to the middle, the second segment depressed at the base. Hypopygium with the sides parallel close to the base, then triangular, with a short apical spine.

Black; the apex of the mandibles, the femora, tibiæ, and tarsi ferruginous. Wings hyaline, nervures fuscous, the stigma ferruginous.

Length 10 mm.

Hab. The locality is given on the label as Endeavour River, Queensland, but others from the same source and similarly labelled are Victorian, so probably this species is also from Victoria.

The palpi are not very slender, but the three apical joints of the maxillary palpi are longer than the others. In all species of *Tachynomys* which I have taken in North Queensland these three apical joints are very long and slender.

Type in the Berlin Museum.

ZELEBORIA OLIVEI, sp. n.

♂. Clypeus produced and rather narrowly truncate at the apex, very finely punctured, clothed with short white pubescence. Head finely and very closely punctured; the interantennal prominence not very broad, deeply bilobed at the apex; the antennae filiform, slender, nearly as broad as the head, thorax, and median segment combined; ocelli very near together, the posterior pair more than twice as far from the eyes as from each other; the three apical joints of the maxillary palpi long and slender, the galea with a faintly marked dividing-line; the fringe on the sides of the head sparse and white. Thorax rather slender, narrower than the head, closely and finely punctured; the pronotum very finely punctured, with the anterior margin strongly raised. Median segment very finely rugulose, almost smooth at the base. Scutellum rather narrowly truncate at the apex, with an obscure longitudinal carina. Abdomen slender, elongate-fusiform, smooth and shining, the division between the two basal ventral segments scarcely marked. Hypopygium rounded, with an acute apical spine.

Black; the tegulae fuscous. Wings very pale fusco-hyaline, nervures fuscous.

Length 14 mm.

Hab. Cooktown, Q.

A slenderer species than *longicornis* Turn.

PHYMATOTHYNNUS NITIDUS Sm.

Thynnus (Agriomyia) nitidus Sm. Cat. Hym. B. M. vii. p. 30 (1859), ♂.

♂. The apical joints of the antennae are arcuate beneath.

♀. Mandibles falcate, slender and pointed; clypeus with a very short carina from the base not reaching the middle. Head very slightly convex, twice as broad anteriorly as long, strongly rounded at the posterior angles, rather sparsely but not finely punctured, each puncture bearing a pale fulvous hair; a fine and short frontal sulcus. Antennae inserted nearly as far from each other as from the eyes, the front between them not bituberculate. Thorax and median segment shining and almost smooth; the pronotum about half as wide as the head, rectangular, nearly as long as broad, with two small tubercles on the anterior margin. Median segment raised into a hump-like tubercle just behind the

scutellum, then obliquely depressed and strongly concave on the sides, broadened from the base, the depressed surface longer and narrower than the pronotum. First abdominal segment rather narrowly truncate anteriorly, shining, finely and sparsely punctured, the dorsal surface nearly as long as the second segment, the apical margin narrowly depressed; second segment transversely rugose between two transverse carinae, the apical margin strongly raised; segments 3-5 very delicately punctured-rugulose, with a few large scattered punctures. Ventral segments coarsely punctured-rugose. Pygidium not constricted at the base, vertically truncate, the surface of the truncation ovate; the dorsal plate obliquely rugulose with a strong median longitudinal carina, nearly as long as the ventral plate. Tarsal ungues bidentate.

Head, thorax, and legs ferruginous; abdomen black; the apex of the pygidium fusco-ferruginous.

Length 9 mm.

Hab. Claremont, W. A. (*H. M. Giles*). December. ♂ ♀ in cop.
"On *Eucalyptus* bloom."

GLAPHYROTHYNNUS SITIENS Turn.

Thynnus (Glaphyrothynnus) sitiens Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 112 (1908), ♂.

♂. The spine on each side near the base of the hypopygium mentioned in the original description is really only a protrusion of the apex of the claspers in the type specimen. As in other species of this difficult group, the extent of the yellow markings is variable.

♀. Head fully twice as broad anteriorly as long, strongly rounded at the posterior angles, shining, with a few scattered punctures, more closely punctured on the front than on the vertex. Antennae inserted much farther from each other than from the eyes; the joints of the flagellum much broader than long and produced at the apex beneath. Pronotum much narrower than the head, nearly twice as broad on the anterior margin as long, narrowed posteriorly, finely and sparsely punctured, with a row of long white hairs on the anterior and lateral margins. Scutellum transverse. Median segment short, scarcely longer than the scutellum, very sparsely punctured, the punctures piliferous, steeply sloped posteriorly. Abdomen impunctate, except at the apex of the raised portion of the first, fourth, and fifth segments; the first dorsal segment divided transversely into two almost equal portions, the apical portion depressed and smooth, the apical margin very feebly raised; second segment with four transverse carinae including the moderately raised apical margin, the basal carina low and sometimes hidden by the first segment, the third very high and separated from the apex by a broad depressed space; third segment depressed at the apex rather narrowly, the raised portion before the apex strongly bilobed; fourth and fifth segments narrowly transversely depressed on the

apical margin. Pygidium elongate, vertical, the sides almost parallel, more than twice as long as broad, the sides raised into marginal carinae at the base, a few fine longitudinal striae at the base, rounded at the apex. Fifth ventral segment rather coarsely punctured. Intermediate tibiae shallowly emarginate near the base beneath and produced at the apex of the emargination into a short stout spine directed towards the base; intermediate tarsi slender.

Testaceous brown; the head ferruginous brown; the apical depressed portions of the abdominal segments luteous.

Length 6 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. January.
"On *Leptospermum* bloom."

The head of the female is shaped as in *marginalis* Westw., but in that species there is no spine on the intermediate tibiae and the first abdominal segment is much more narrowly depressed at the apex. In *trifidus* Westw. the head is much larger, but there is a similar spine on the intermediate tibiae.

GLAPHYROTHYNNUS TRIFIDUS Westw.

Thynnus trifidus Westw. *Arcana Ent.* ii. p. 119 (1844), ♂.

♀. Head large, less than twice as broad anteriorly as long, rounded at the posterior angles, but not so strongly as in *sitiens* and *marginalis*, shining, very minutely punctured, with a distinct, longitudinal, frontal sulcus and a few large punctures round the base of the antennae. Thorax shining, very minutely punctured; the pronotum twice as broad anteriorly as long, narrower than the head and narrowed a little posteriorly, the anterior and lateral margins with a few long greyish hairs. Scutellum transverse and short. Median segment distinctly longer than the scutellum, broadened from the base and very steeply sloped posteriorly. Abdomen with a few sparse punctures; the dorsal surface of the first segment divided transversely, the basal portion raised and distinctly longer than the strongly depressed apical portion; second segment with four transverse carinae, including the recurved apical margin; segments 3-4 with a raised, curved mark on each side before the depressed apical margin. Pygidium vertical, very feebly recurved at the apex, elongate-ovate, twice as long as the greatest breadth, longitudinally striated on the basal half, narrowly subtruncate at the apex. Fifth ventral segment punctured-rugose. Intermediate tibiae beneath with a spine directed towards the base, emarginate between the spine and the base.

Fuscous; the mandibles, antennae, and legs testaceous brown; the sides and depressed portions of the abdominal segments pale luteous.

Length 9 mm.

Hab. Cottesloe, near Fremantle, W. A. (*H. M. Giles*). ♂ ♀ in cop. December.

"On *Eucalyptus* bloom."

GLAPHYROTHYNNUS CARINATUS Sm.

Thynnus carinatus Sm. Cat. Hym. B. M. vii. p. 29 (1859), ♂.

? *Zeleboria carinata* Sauss. Reise Novara, Zool. ii. Hym. p. 131 (1867), ♂ ♀.

I am very doubtful if Saussure's description can be intended for this species. Smith's type was from Western Australia, and specimens received from Mr. Giles and which I have compared with the type are mated with the female described below.

♀. Head not large, nearly twice as broad anteriorly as long, strongly rounded at the posterior angles, shining and very sparsely punctured, with a short frontal sulcus, the punctures round the base of the antennæ closer and piliferous. Thorax much narrower than the head; the pronotum less than twice as broad anteriorly as long and half as broad again anteriorly as posteriorly, the anterior and lateral margins with a sparse fringe of long hairs, finely and sparsely punctured. Median segment short, about the same length as the scutellum, strongly broadened from the base, the posterior truncation almost vertical. First dorsal abdominal segment divided into two almost equal parts, the apical portion strongly depressed and smooth, the basal portion raised and very sparsely punctured; second segment with four transverse carinæ, including the raised apical margin, the basal carina very low and often covered by the first segment, the third high and separated from the apical margin by a broad groove. Third and fourth segments with a raised curved mark on each side before the apex, the apical margin depressed, the raised portion punctured at the apex. Pygidium almost vertically truncate, long and narrow, about three times as long as the greatest breadth, a little broader towards the apex than at the base, rounded at the apex, the dorsal plate as long as the ventral, the basal portion with a median longitudinal carina and two lower carinæ converging at the base on each side. Fifth ventral segment coarsely punctured in the middle at the apex. There is an emargination and spine near the base of the intermediate tibiæ beneath as in *sitiens* and *trifidus*.

Pale luteous; head fusco-ferruginous; median segment, the apex of the raised portions of the first, third, and fourth dorsal abdominal segments, and the third carina on the second segment black.

Length 6-7 mm.

Hab. Claremont and Cottesloe, W. A. (*H. M. Giles*).

The colour is very variable, the black in some specimens being much more extensive.

Females from the east coast answer rather better to Saussure's description. The male is hardly distinguishable from the western specimens.

GLAPHYROTHYNNUS FUSIFORMIS Sauss.

Zeleboria fusiformis Sauss. Reise Novara, Zool. ii. Hym. p. 132 (1867), ♂.

I was evidently wrong in sin'king this as a synonym of

carinatus. Saussure's description agrees with male specimens sent by Mr. Giles, which closely resemble that species, but are paired with a female which is quite sufficiently distinct.

♀. Head rather large, nearly twice as broad anteriorly as long, rounded at the posterior angles, but not so strongly as in *carinatus*, very sparsely punctured, and finely shagreened. Thorax and median segment rather strongly punctured, shaped as in *carinatus*, but with longer and closer pubescence. Abdomen and pygidium as in *carinatus*, but the abdomen is broader, the punctures on the third, fourth, and fifth segments coarser and closer, the same segments being also sparsely clothed at the apex with long white hairs, and the raised marks not so strongly curved. The emargination on the intermediate tibiae is less distinct, and the spine shorter and blunt.

Black; the antennae, legs, and pygidium fusco-ferruginous; the sides of the abdomen and first and second segments at the apex pale luteous.

Length 7 mm.

Hab. South Perth, W. A. (*H. M. Giles*). November.

ASTHENOTHYNNUS DEDUCTOR, sp. n.

♂. Clypeus produced and very narrowly truncate at the apex, finely and closely punctured, with a carina from the base not quite reaching the apex, the apical margin narrowly depressed. Head finely and closely punctured, with a short, shining, longitudinal sulcus on the front; the interantennal prominence not much developed. Antennae inserted nearer to each other than to the eyes, shorter than the thorax and median segment combined, rather stout throughout, the apical joints very feebly arcuate beneath. Thorax finely and closely punctured, more sparsely on the scutellum; pronotum narrowed anteriorly. Median segment longer than broad, rounded, minutely punctured. Abdomen slender, flattened, shorter than the head, thorax, and median segment combined, very delicately punctured, shining, broadened from the base; the first segment slender, with a deep sulcus from the base not reaching the apex. Hypopygium small, narrow, the sides parallel, subconical at the apex, without spines.

Black; the base of the mandibles, the inner orbits of the eyes very narrowly as high as the base of the antennae, two very minute spots between the antennae, the margins of the pronotum, and the postscutellum yellow; the apex of the clypeus, the tegulae, the second and third abdominal segments, the apex of the first, and the legs, except the coxae, bright ferruginous. Wings hyaline, slightly iridescent, nervures black, stigma pale ferruginous.

Length 6 mm.

Hab. Claremont, W. A. (*H. M. Giles*). December.

Nearest to *rubromaculatus* Turn.

ÆOLOTHYNNUS CRENULATUS, sp. n. (Plate XXXI. fig. 8, ♂.)

♂. Clypeus moderately convex, advanced and truncate at the apex, finely and shallowly punctured. Maxillary palpi rather stout, the basal joint short the apical lobe of the galea beyond the dividing-line large and rounded at the apex. Antennæ as long as the thorax without the median segment, of even thickness throughout, inserted a little nearer to each other than to the eyes. Head finely and closely punctured, no broader than the pronotum; the front and clypeus thinly clothed with long grey pubescence. Thorax rather closely punctured, sparsely on the scutellum, very closely on the mesopleuræ; pronotum only slightly narrowed anteriorly, the anterior margin slightly raised and almost straight; mesonotum less than twice as long as the pronotum; scutellum broadly truncate at the apex. Median segment finely and closely punctured, very short, steeply sloped posteriorly but not truncate, the sides clothed with white pubescence; an almost obsolete impressed longitudinal line from the base not reaching the middle. Abdomen longer than the head and thorax combined, the sides nearly parallel; segments strongly constricted at the base; the sixth ventral segment with a spine on each side at the apical angles; the dorsal segments closely punctured; the ventral segments punctured-rugose, finely longitudinally striated at the extreme base. Hypopygium broad, tridentate, the lateral spines very short, the apical spine much longer.

Black; the mandibles at the base, the apex of the clypeus, and two minute spots between the antennæ whitish yellow, a large quadrate spot on the mesonotum, the tegulæ and a curved line above them, a spot on the mesopleuræ below the anterior wings, a broad transverse band on the scutellum, and a small spot at each of the anterior angles, the postscutellum, a broad transverse band interrupted in the middle on each of the five basal dorsal abdominal segments, narrowest on the first, a spot on each side of the sixth segment, and the apical half of the anterior and intermediate femora beneath, yellow; tibiæ and tarsi fusco-ferruginous. Wings hyaline, nervures black, the stigma fusco-ferruginous.

The second cubital cell is much longer on the radial nerve than the third, and receives the first recurrent nervure beyond three-quarters from the base, the second recurrent nervure is received near the base of the third cubital cell.

Length 12 mm., exp. of wings 20 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*). April.

Belongs to the *cerceroides* group, but is not very near any described species.

ÆOLOTHYNNUS PERTURBATUS, sp. n.

♂. Clypeus slightly convex, advanced and rather broadly truncate at the apex, finely punctured, almost smooth in the middle. Antennæ rather short, of even thickness throughout. Head finely and closely punctured, thinly clothed with white pubescence, scarcely broader than the pronotum. Thorax finely

and closely punctured, with sparse white pubescence; the pronotum very broadly and shallowly emarginate on the anterior margin, which is slightly raised; mesonotum nearly twice as long as the pronotum; scutellum shining and sparsely punctured. Median segment short, steeply sloped posteriorly, but not truncate, very closely and finely punctured. Abdomen elongate, as long as the head and thorax combined, the sides almost parallel from the base; the segments very strongly constricted at the base, shining and sparsely punctured. Sixth ventral segment with a spine on each side at the apical angles. Hypopygium ending in three long spines, the central spine the longest. Seventh dorsal segment coarsely punctured, the apical margin raised and slightly produced towards the middle. Second cubital cell twice as long as the third on the radial nervure; the second recurrent nervure received close to the base of the third cubital cell, almost interstitial with the second transverse cubital nervure.

Black; the mandibles at the base, the apical margin of the clypeus, a line on each side on the anterior margin of the pronotum, and the postscutellum pale creamy white; the two apical abdominal segments ferruginous red. Tegulae creamy white at the base, testaceous at the apex. Wings hyaline, nervures black.

Length 9 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*).

Very near *sanguinolentus* Turn. from Liverpool, N.S.W., but the median segment in the present species is more rounded, not truncate, and is more finely punctured. The third cubital cell in *sanguinolentus* is fully as long as the second on the radial nervure. Also near *decipiens* Westw., but differs in the broadly emarginate pronotum, the shape of the clypeus, and the presence of whitish markings. The second recurrent nervure is more nearly interstitial than in either of the species mentioned.

TMESOTHYNNUS PLATYCEPHALUS, sp. n.

♂. Clypeus convex, punctured, produced and rather narrowly truncate at the apex. Head rather small, closely punctured-rugose; the interantennal prominence not well developed; a very delicate longitudinal frontal carina not reaching the anterior ocellus. Antennae no longer than the thorax without the median segment, of nearly equal thickness throughout, the apical joints very feebly arcuate beneath. Thorax finely and closely punctured; the pronotum short, narrowed anteriorly, the anterior margin slightly raised; scutellum strongly convex. Median segment rounded, very finely and closely punctured, the extreme base smooth and shining. Abdomen as long as the head, thorax, and median segment combined, tapering a little at the extremities, the segments strongly constricted at the base, the apical margins narrowly depressed, punctured at the base, smooth and shining at the apex. Hypopygium short, projecting very little beyond the dorsal segment, with a long apical spine, a short spine on each side often concealed beneath the dorsal segment. Second

abscissa of the radius longer than the third; second recurrent nervure received near the base of the third cubital cell.

Black; the mandibles, the apex of the clypeus, two minute spots between the antennae, the posterior margin of the pronotum, the anterior angles of the pronotum, the tegulae, and the post-scutellum pale yellow. Tibiae ferruginous brown. Wings hyaline, nervures black, the stigma ferruginous.

Length 9 mm.

♀. Head flattened, small, as long as the breadth anteriorly, narrowed posteriorly, coarsely punctured on the front, very sparsely on the vertex, without a frontal sulcus. Thorax narrower than the head, punctured; the pronotum a little broader than long, the sides nearly parallel and raised into marginal carinae, with a longitudinal median carina; scutellum small, with a median carina. Median segment no longer than the scutellum, sharply broadened from the base and steeply sloped posteriorly, punctured and with sparse long pubescence. First dorsal abdominal segment divided into two portions, the basal portion raised and strongly emarginate posteriorly, sparsely punctured, the apical portion depressed and smooth; second segment with four transverse carinae, including the raised apical margin, the two basal carinae rather broadly separated from those at the apex; segments 3-5 rather coarsely punctured near the apex, the base finely aciculate, the apical margin narrowly depressed and smooth. Pygidium deflexed and broadened from the base; the dorsal plate rather narrowly ovate, with a low median carina and raised margins; the ventral plate projecting beyond the dorsal both on the sides and at the apex, rounded, with a narrow emargination at the apex. Fifth ventral segment finely punctured.

Black; the mandibles, antennae, legs, and pygidium fuscous, the apex of the first dorsal abdominal segment, the space between the carinae on the second and the extreme apical margin of the third whitish, in some specimens darker.

Length 5-7 mm.

Hab. South Perth, W. A. (*H. M. Giles*). 5 ♂, 5 ♀. January. "On *Leptospermum* bloom."

Nearest to *truncatus* Sm.

EPACTIOTHYNNUS CYGNORUM Turn.

Thynnus (*Eolothynnus*) *cygnorum* Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 141 (1908), ♂.

♂. Varies in size from 10 to 14 mm.

♀. Head slightly convex, broader than long, strongly rounded at the posterior angles, flattened on the vertex, sparsely punctured, the vertex and the front in the middle almost smooth, a longitudinal sulcus on the front; a small patch of white pubescence on each side about halfway between the eye and the posterior margin of the head. Pronotum nearly twice as broad anteriorly as long, narrowed a little posteriorly, closely punctured, margined anteriorly and laterally with long grey hairs, without a carina or

tubercle. Median segment a little shorter than the scutellum, broadened from the base and obliquely truncate posteriorly, closely punctured and thinly covered with long grey pubescence. Abdomen smooth, with a few scattered punctures, the first segment with a deep transverse groove before the apex, the second segment with four strong transverse carinae in addition to the raised apical margin. Fifth ventral segment coarsely punctured-rugose. Pygidium truncate posteriorly, very narrow, the surface of the truncation very narrowly elongate-ovate, about five times as long as the greatest breadth, the lateral margins raised.

Head and thorax dark ferruginous; median segment and abdomen black; a broad band on the first, third, and fourth dorsal segments and the sides of the second segment pale luteous; anterior and intermediate legs fusco-ferruginous.

Length 6-9 mm.

The colour varies much, some specimens being darker than the type.

Hab. Claremont, W. A. (*H. M. Giles*). December and January. "On *Eucalyptus* bloom. Common."

The absence of a carina on the pronotum is remarkable, separating the female from the nearly allied species. The head is somewhat compressed laterally behind the eyes.

EPACTIOTHYNNUS LABORIOSUS, sp. n.

♂. Clypeus convex, produced and rather broadly truncate at the apex. Head finely and very closely punctured; a very short longitudinal carina between the antennae, which are inserted further from each other than from the eyes and are a little shorter than the thorax and median segment combined; the second joint of the flagellum scarcely more than half as long as the third. Pronotum nearly as broad as the head, slightly narrowed anteriorly, the anterior margin a little raised and straight, minutely punctured. Mesonotum and scutellum finely and very closely punctured; the scutellum rather narrowly truncate at the apex, with a well-marked longitudinal carina on the apical half. Median segment rounded, very finely punctured-rugulose. Abdomen a little longer than the head, thorax, and median segment combined, narrowed at the base, sparsely punctured; segments 2-5 strongly constricted at the base and depressed on the apical margin; the basal segment with a deep sulcus from the base nearly reaching the apex. Hypopygium with a short spine on each side near the base, thence narrowed sharply to the base of the acute apical spine. No spine on the sixth ventral segment.

Black; the abdomen, except the base of the first segment, the femora, tibiae, and tarsi ferruginous red; tegulae testaceous; base of the mandibles, apical margin of the clypeus, a spot on each side near the middle of the clypeus, the margins of the eyes narrowly as high as the base of the antennae, and the posterior margin of the postscutellum pale yellowish. An obscure spot on each side of the vertex, near the summit of the eyes, dull

ferruginous. Wings hyaline, faintly clouded near the apex, nervures black, stigma fusco-ferruginous.

Length 11 mm.

♀. Head rectangular, slightly rounded at the posterior angles, a little broader than long, sparsely but rather coarsely punctured, with a strong, longitudinal, frontal sulcus. Pronotum a little narrower than the head, broadly emarginate anteriorly, nearly half as broad again as long, with a well-marked median carina, depressed and slightly concave on each side of the carina, minutely punctured. Median segment as long as the scutellum, broadened from the base and obliquely truncate posteriorly, closely punctured. Abdomen much broader than the thorax, the first segment truncate at the base, with a transverse carina above the truncation, the dorsal surface very broadly depressed to the apex, with a raised curved mark on each side; the second segment with two or three transverse carinae near the base, the apical margin very feebly raised; segments 3 and 4 broadly depressed at the apex, with a raised, curved, punctured mark on each side; fifth segment sparsely punctured. Ventral surface closely and rather coarsely punctured on the fifth segment as well as on the rest. Pygidium very narrow, deflexed and lanceolate, very narrowly rounded at the apex.

Fuscous; the apical margins of the abdominal segments broadly pale testaceous; the carinae on the second segment and the pygidium fusco-ferruginous.

Length 6 mm.

Hab. Claremont, W. A. (*H. M. Giles*). ♂ ♀ in cop. December.
"On *Eucalyptus* bloom."

Nearest to *excellens* Sm.

EPACTIOTHYNNUS DAHLI, sp. n.

♂. Clypeus advanced and not very narrowly truncate at the apex, coarsely but shallowly punctured, convex. Antennae as long as the thorax and median segment combined, a little slenderer at the apex than at the base, the apical joints very feebly arcuate beneath; the third joint of the flagellum as long as the first and second combined; inserted a little further from each other than from the eyes, the interantennal carinae oblique. Head very closely punctured, with short grey pubescence on the front, a little broader than the pronotum. Thorax very closely punctured, more sparsely on the pronotum. Median segment much shorter than the mesonotum, twice as broad as long, scarcely narrowed to the apex, more finely punctured than the mesonotum; a large, shallow, smooth depression on each side at the base. Abdomen shining, sparsely punctured, the sides almost parallel, tapering very slightly at the extremities; the first segment with a sulcus from the base to beyond the middle; segments 2-5 slightly constricted at the base; the seventh dorsal segment rugose, broad at the apex and with the apical margin raised to form a low carina. Ventral segments 2-5 subtuberculate at the

apical angles, the sixth segment without a spine. Hypopygium with a spine on each side close to the base, thence rather narrowly triangular to the base of the acute apical spine. Second abscissa of the radius more than half as long again as the third, the first recurrent nervure received at three-quarters from the base of the second cubital cell, the second at one-fifth from the base of the third cubital cell.

Black; the clypeus, except a pyriform black mark on the middle, the base of the mandibles, two oblique lines between the antennæ, the margins of the pronotum, a spot on the mesonotum, the tegulæ, a broad curved band on the mesopleuræ beneath the anterior wings, a spot before the intermediate coxæ, a large spot on the scutellum and a smaller one at each of the anterior angles, the postscutellum, an irregular transverse band at the apex of the median segment, sometimes interrupted, a narrow transverse band on each side on dorsal segments 1-5, and a small spot at the base of the anterior tibiæ, yellow; a small spot close to the summit of each eye dark ferruginous red; the anterior and intermediate tibiæ and tarsi testaceous brown. Wings hyaline, nervures fuscous, the stigma ferruginous brown.

Length 12 mm.

♀. Head shining, sparsely punctured, more closely on the front than elsewhere, much broader anteriorly than long, strongly rounded posteriorly; the clypeus short and with a longitudinal carina. Pronotum narrower than the head, narrowed posteriorly, the anterior angles rather prominent (the dorsal surface destroyed by the pin); scutellum very narrow, longer than broad. Median segment punctured, shorter than the scutellum, broadened from the base and obliquely truncate posteriorly, the surface of the truncation shining, at the base finely punctured and pubescent. Abdomen shining, with a few scattered punctures, the first segment with the apical margin raised and a broad transverse groove before it; second segment with five strong transverse carinæ in addition to the raised apical margin. Pygidium sharply deflexed, long and narrow, nearly four times as long as the greatest breadth, broadest at the middle, narrowly rounded at the apex, a tuft of long golden hairs on each side. Fifth ventral segment very coarsely and closely punctured.

Fuscous; head and pygidium fusco-ferruginous, legs ferruginous brown; apical margin of the second dorsal segment of the abdomen pale testaceous.

Length 6 mm.

Hab. Ralum, New Britain (*Dahl*). ♂ ♀ in cop.

Types in the Berlin Museum. Described from three males and one female.

The male is very near *abductor* Sm. and *vagans* Sm., but the female differs from that of *vagans* in the shape of the head and in the number of carinæ on the second dorsal segment; in the latter character it also differs from *lævissimus* Sm., which is probably the female of *abductor*. The yellow band at the apex of

the median segment of the male is absent in all specimens I have seen of *abductor*. The median segment is rather shorter and more rectangular than in either of the two species mentioned.

GYMNOTHYNNUS (?) *LESCEUFI*, sp. n.

♂. Clypeus strongly convex, produced and narrowly truncate at the apex. Head very closely and rather coarsely punctured; the antennæ about as long as the thorax without the median segment. Thorax finely and closely punctured; the pronotum narrower than the head, narrowed anteriorly; the scutellum rather broadly truncate at the apex. Median segment rounded, smooth and shining at the base, very finely punctured at the apex. Abdomen about as long as the head, thorax, and median segment combined, elongate fusiform, punctured, the segments strongly constricted at the base, the apical margin narrowly depressed. Sixth ventral segment without spines. Hypopygium broad, tridentate at the apex, the lateral spines short. Second cubital cell about equal in length to the third on the radial nervure, the first recurrent nervure received at about three-quarters from the base of the second cubital cell, the second received at one-fifth from the base of the third cubital cell.

Black; the mandibles at the base, the anterior margin of the clypeus, the margins of the pronotum, tegulæ, a narrow and obscure longitudinal line on the mesonotum, a broader one on the scutellum, and a transverse band on the postscutellum pale luteous yellow; anterior tibiæ and tarsi ferruginous. Wings hyaline, nervures black, the stigma pale ferruginous.

Length 8 mm.

♀. Head strongly compressed laterally, as thick as broad, the sides slightly concave at the posterior angles, broadened at the base of the mandibles, nearly twice as long as the greatest breadth, deflexed anteriorly, the front rather strongly punctured, with an obscure longitudinal sulcus, the vertex smooth. Pronotum broader than the head, almost rectangular, nearly half as long again as broad, quite flat and opaque; scutellum shining, small and narrow. Median segment shining and punctured, very narrow at the base, broadened and abruptly truncate posteriorly, a little longer than the scutellum. Abdomen much broader than the thorax, the segments very broadly depressed at the apex, punctured at the base, with a smooth rounded mark on each side before the depressed area. Pygidium long and narrow, deflexed, with long pubescence at the sides.

Black; the depressed apical portion of the abdominal segments shining and very pale luteous; pygidium fusco-ferruginous.

Length 4 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. January. "On *Leptospermum* bloom."

The female is very distinct; the shape of the head is remarkable and also the absence of carinæ on the second abdominal segment. In the flattened pronotum it approaches *gilberti* Turn.

GYMNOTHYNNUS (?) TRIANGULICEPS, sp. n. (Plate XXXI. fig. 4, ♀.)

♀. Mandibles falcate, rather long and acute at the apex. Clypeus slightly produced, truncate at the apex, without a carina. Head very thin, slightly convex, as long as the breadth on the anterior margin, much narrowed posteriorly, subtriangular, narrowly truncate posteriorly, subopaque, with a few scattered punctures, an obscure longitudinal carina on the front, the lateral margins slightly raised. Pronotum rectangular, a little longer than broad, flat, subopaque, and without punctures, the lateral margins slightly raised, broader than the posterior margin of the head. Scutellum shining, very small; pleuræ finely aciculate. Median segment scarcely longer than the scutellum, broadened from the base and obliquely truncate posteriorly. Abdomen much broader than the thorax, the segments divided into two nearly equal parts transversely, the basal portion raised and broadly emarginate in the middle posteriorly, the apical portion strongly depressed, the sculpture of the second segment not differentiated. Pygidium long, elongate-ovate, convex, subcarinate longitudinally, not truncate or deflexed, with long grey hairs at the base.

Fuscous; the legs and mandibles fusco-ferruginous; pygidium testaceous; the depressed apical portions of the abdominal segments pale shining luteous.

Length 4 mm.

Hab. Cossack, W. A. (*J. J. Walker*).

Allied to *lescaufi* described above, but the shape of the head is very different.

HEMITHYNNUS PRÆSTABILIS, sp. n.

♂. Clypeus transversely rugulose, almost smooth at the apex, deeply triangularly emarginate, the angles of the emargination produced into short spines, a narrow and shallowly impressed line from the base not reaching the apex. Head finely and closely punctured, thickly clothed with long fulvous pubescence, which is longest between the antennæ and on the cheeks, with a shallow frontal sulcus which reaches the anterior ocellus. Antennæ a little shorter than the thorax and median segment combined, the apical joints tapering and slightly arcuate. Thorax finely and closely punctured, the anterior margin of the pronotum rather strongly raised, the angles not prominent; the pronotum and scutellum clothed with sparse and long fulvous hairs. Median segment more finely and shallowly punctured, the pubescence on the sides long and white. Abdomen slightly fusiform, shining, finely and very sparsely punctured; the apical dorsal segment narrowly truncate at the apex, with curved striæ; a thick tuft of long fulvous hairs below the dorsal segment and above the hypopygium, which is produced on each side near the base into a sharp angle, thence triangular, with the sides curved upwards to the base of the slightly recurved apical spine. Second abscissa of the

radius a little longer than the third, the first recurrent nervure received at three-quarters from the base of the second cubital cell, the second at one-quarter from the base of the third cubital cell.

Black; the mandibles and the anterior margin of the clypeus yellow; the seventh abdominal segment and the sixth, except the extreme base, ferruginous red; tibiæ and tarsi light ferruginous. Wings hyaline, slightly tinged with yellow, nervures ferruginous at the base and apex and on the costa, fuscous in the middle.

Length 17 mm.

Hab. Western Australia (*Preiss*).

Type in Berlin Museum.

The emargination of the clypeus is unusual in Australian species.

HEMITHYNNUS PETULANS Sm. (Plate XXXI. figs. 5 ♂, 6 ♀.)

Thynnus petulans Sm. Descr. n. sp. Hym. p. 165 (1879), ♂.

♀. Clypeus very broadly and shallowly emarginate at the apex, with a short carina from the base not quite reaching the apex. Head moderately thick, slightly convex, half as broad again as long, rounded at the posterior angles, shining and sparsely punctured, the front between the antennæ coarsely punctured and divided by a delicate longitudinal sulcus. Thorax subopaque, closely and minutely punctured; the pronotum nearly twice as broad as long, with a row of deep setigerous punctures along the straight anterior margin. Median segment as long as the scutellum, broadened from the base and obliquely truncate posteriorly. A few large scattered punctures on the scutellum and median segment. Abdomen broad, nearly twice as long as the head and thorax combined, smooth, with a few scattered punctures; the first segment broad and short, not narrowed towards the base, with three or four low and fine transverse carinæ at the apex; second segment with about nine well-raised but more or less irregular transverse carinæ; fifth ventral segment longitudinally striated. Pygidium vertically deflexed posteriorly, the dorsal plate more than twice as long as broad, coarsely longitudinally striated at the base, smooth at the apex and very feebly trilobed.

Head and thorax ferruginous red; legs fusco-ferruginous; abdomen black, the first, third, fourth, and fifth dorsal segments with a broad yellow transverse band near the apex, the second dorsal segment with a large yellow spot on each side.

Length 11–16 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. December and January.

“Resting on *Inula* shrub and *Eucalyptus* bloom. Not regular in its appearance, some years none are seen.” (*Giles*.)

The female is nearly allied to those of *protervus* Sm. and *inconstans* Sm., but differs from the former in the colour of the head and thorax and in the shape of the first abdominal segment: from the latter species in the development of the carinæ on the two basal segments and in the rather narrower pygidium.

HEMITHYNNUS WALLISII Sm.

Thynnus wallisii Sm. Cat. Hym. B. M. vii. p. 14 (1859), ♂ ♀.

Specimens of this species in the Berlin Museum have the antennæ of the male ferruginous. The locality given for these specimens is New South Wales without any more precise information.

ONCORRHINUS XANTHOSPILUS Shuck. (Plate XXXI. fig. 7, ♀.)

Oncorhinus xanthospilus Shuck., Grey's Journal of two Expeditions to N.W. and W. Australia, ii. p. 471 (1841), ♂.

♀. Mandibles simple, not bidentate; clypeus truncate at the apex, finely punctured, without a carina. Head slightly convex, nearly twice as broad as long, with a short, longitudinal, frontal sulcus; smooth, with deep sparse punctures above the base of the antennæ and on the vertex. Antennæ shorter than the breadth of the head; the joints of the flagellum broader than long. Posterior angles of the head rounded. Thorax sparsely punctured; the pronotum narrower than the head, twice as broad as long, very slightly narrowed posteriorly; scutellum much broader than long. Median segment very short, obliquely truncate a little behind the scutellum, the surface of the truncation finely shagreened. Abdomen broader than the thorax; very shallowly and sparsely punctured; the basal segment concavo-truncate anteriorly, very narrowly depressed on the apical margin; second segment irregularly and finely transversely carinated, with a strong transverse carina near the apex separated by a broad groove from the strongly raised apical margin. Pygidium not contracted at the base, vertically truncate posteriorly, the surface of the truncation broadly ovate and longitudinally striated, the striæ strong and arched at the base. Fifth ventral segment coarsely longitudinally striated. Intermediate tibiæ moderately thickened; the first joint of the intermediate tarsi normal, not thickened; tarsal ungues bidentate, small.

Fusco-ferruginous, the legs and pygidium paler; head black; the sides of the abdominal segments pale testaceous.

Length 12 mm.

Hab. South Perth, Guildford, W. A. (*H. M. Giles*). ♂ ♀ in cop. "On *Eucalyptus* bloom. Fairly common." (*Giles*.)

The disparity between the sexes is great and the female is not so aberrant as the male, showing close relationship to other species allied to the *Macrothynnus* group. The palpi are minute as in *Thynnus*, the maxillary palpi two-jointed, the labial palpi three-jointed.

MACROTHYNNUS SIMILLIMUS Sm.

Thynnus simillimus Sm. Cat. Hym. B. M. vii. p. 15 (1859), ♂.

A male specimen sent by Mr. Giles differs from the typical form from New South Wales in the somewhat less robust form, the presence of a low longitudinal carina on the scutellum, and the more triangular shape of the hypopygium.

Hab. South Perth, W. A.

THYNNOIDES PREISSII, sp. n.

Thynnus preissii Klug, MS.

♂. Clypeus rounded at the apex, shallowly and rather sparsely punctured, prominent at the base. Antennæ as long as the thorax and median segment combined, inserted much further from each other than from the eyes, of almost equal thickness throughout; the interantennal prominence very broadly rounded at the apex, divided by a short longitudinal carina. Head and thorax closely and finely punctured, the front more coarsely, the scutellum more sparsely; the anterior margin of the pronotum almost straight, very slightly emarginate, strongly raised, with a deep groove behind it, the angles rather prominent; scutellum broadly truncate at the apex. Median segment very delicately punctured-rugulose, obliquely depressed from the postscutellum, rounded at the sides. Abdomen elongate, much longer than the head, thorax, and median segment combined, the segments very slightly constricted at the base; the first segment with a sulcus from the base nearly reaching the apex, very finely and closely punctured; the apical segment more coarsely punctured, subtruncate at the apex, with a few indistinct transverse striae. Sixth ventral segment without spines. Hypopygium with a blunt spine on each side at the base, thence produced in a very narrow triangular shape to the base of the apical spine. First ventral segment not carinate. Second abscissa of the radius quite as long as the third; second recurrent nervure received at one-third from the base of the third cubital cell.

Black; the mandibles, except at the apex, and the clypeus yellow; a transverse mark near the apex of the clypeus brown. Wings fusco-hyaline, nervures black.

Length 18 mm.

Hab. Western Australia (*Preiss*).

Type in Berlin Museum.

Easily distinguished by the rounded margin of the clypeus.

THYNNOIDES RUFITHORAX, sp. n.

♀. Clypeus small, transverse, punctured, without a carina. Head shining, sparsely punctured, more closely on the front than on the vertex, rather longer than its greatest breadth, much narrowed posteriorly, very slightly convex, with a short blunt spine on each side near the middle of the lateral margin. Thorax shining, obsoletely punctured; the pronotum nearly as broad as the broadest part of the head, twice as broad as long, the anterior margin arched, with a row of setigerous punctures behind it, slightly narrowed posteriorly. Pleuræ shining and almost smooth. Median segment closely punctured, very short, shorter than the scutellum, obliquely truncate posteriorly, the surface of the truncation finely aciculate. Abdomen much broader than the thorax, the segments smooth at the base, finely punctured at the apex; the first segment truncate anteriorly, the dorsal surface divided

into two equal portions by a transverse carina, the basal half sparsely punctured, the apical half depressed and finely aciculated : second segment with three transverse carinae at the base, followed by two more broadly interrupted in the middle, then broadly depressed to the apex, the apical margin raised. Pygidium almost vertical, long and narrow, longitudinally striated near the base, compressed near the middle and smooth at the apex. Fifth ventral segment coarsely rugose.

Black ; the mandibles at the base, the apex of the scape, thorax, median segment, and legs ferruginous red ; the apex of the pygidium testaceous ; flagellum fuscous.

Length 9 mm.

Hab. Ararat, Victoria.

Type in the Berlin Museum.

THYNNOIDES NEPHELOPTERUS, sp. n.

♂. Clypeus large, produced and very broadly subemarginate at the apex, rather sparsely punctured, some of the punctures confluent longitudinally ; the labrum projecting and very shallowly emarginate at the apex. Head very closely and finely punctured, the front punctured-rugose ; the interantennal prominence very broadly rounded at the apex, connected by a short carina with the base of the clypeus, divided by a short, fine, longitudinal carina. Antennae inserted a little further from each other than from the eyes, as long as the thorax without the median segment, very slightly slenderer at the apex than in the middle. Thorax finely and closely punctured, more sparsely on the scutellum ; pronotum with the anterior margin a little raised, the anterior angles somewhat prominent ; scutellum very broadly rounded at the apex. Median segment rounded at the sides, obliquely depressed from near the base, very finely punctured rugulose. Anterior coxae strongly concave beneath. Abdomen fusiform ; segments 2-5 slightly constricted at the base, the segments very finely and closely punctured at the base, a little more strongly and sparsely at the apex ; seventh dorsal segment rugulose, rounded at the apex, without a flattened plate ; sixth ventral segment without spines. Hypopygium with a prominent tooth on each side at the basal angles, thence elongate-triangular to the base of the apical spine, with a few transverse striae on the dorsal surface. The groove between the two basal segments is deep, the second segment is without a tubercle at the base.

Black ; the mandibles (except at the apex) and the clypeus (except a fuscous spot on each side near the apex) orange-yellow ; wings fusco-hyaline, nervures black.

The second recurrent nervure is received just beyond one-quarter from the base of the third cubital cell.

Length 13-19 mm.

♀. Clypeus without a carina ; mandibles falcate. Head strongly convex, nearly as long as the breadth on the anterior margin, much narrowed posteriorly, shining, with a few small

scattered punctures and a longitudinal frontal sulcus; the posterior margin shallowly emarginate. Pronotum shining, with a few small punctures, a little broader than long, the sides almost parallel, the anterior margin feebly rounded in the middle. Median segment less than half as long as the pronotum, broadened from the base, the apical angles subtuberculate, obliquely truncate posteriorly, and very minutely punctured. Abdomen microscopically punctured, with a few large scattered punctures; the basal segment with a transverse carina before the apex, separated by a deep and broad groove from the raised apical margin; second segment with five even and strong transverse carinae, including the raised apical margin; fifth ventral segment coarsely longitudinally striated. Pygidium deflexed, long, exceedingly narrow, almost linear, slightly expanding at the apex, which is very narrowly rounded; the dorsal plate much shorter than the ventral and very feebly and narrowly trilobed at the apex. Anterior coxæ not concave; intermediate tibiæ scarcely broader than the posterior; basal joint of intermediate tarsi normal, not flattened.

Black; the mandibles at the base, the second dorsal abdominal segment, and the spines of tibiæ and tarsi fusco-ferruginous.

Length 8-10 mm.

Hab. South Perth, W. A. (*H. M. Giles*). December.

"On *Leptospermum*, occasionally on *Eucalyptus*. Plentiful every season." (*Giles*.)

THYNNOIDES LANIO, sp. n.

♂. Clypeus large, broad and subemarginate at the apex, sparsely punctured; the extreme apex of the labrum only visible; outer margin of the maxillæ fringed with long hairs. Head finely and very closely punctured; the interantennal prominence pointed at the apex and connected by a short and broad carina with the base of the clypeus. Antennæ as long as the thorax without the median segment, tapering very slightly towards the apex. Thorax and median segment finely and closely punctured, most sparsely on the scutellum, most closely and finely on the median segment; the pronotum narrowed anteriorly, the anterior margin slightly raised; median segment short, rounded at the sides, obliquely sloped from just behind the postscutellum. Abdomen elongate fusiform, the segments feebly constricted at the base, rather closely and not very finely punctured; the basal segment oblique from near the apex to the base, divided by a median sulcus which nearly reaches the apex; the apical dorsal segment deflexed and strongly punctured; the groove between the two basal ventral segments broad but rather shallow, the sixth ventral segment without spines. Hypopygium with a tooth on each side at the basal angles, thence triangular to the base of the acute apical spine. Anterior coxæ not concave.

Black, with sparse grey pubescence, long and close on the median segment; the clypeus, mandibles (except the apical teeth), the margins of the eyes interrupted on the summit, a short oblique

line on each side between the antennæ, a narrow transverse band broadly interrupted in the middle on the pronotum, and two spots on the tegulæ, yellow; a short transverse band broadly interrupted in the middle on dorsal segments 2-5 ferruginous brown, tinged with yellow on the second and third, very obscure on the fifth segment; the base of ventral segments 2-5 narrowly fusco-ferruginous. Wings hyaline washed with fuscous, nervures black.

Anterior tibiæ beneath fusco-ferruginous.

Length 20 mm.

♀. Clypeus without a carina. Head nearly rectangular, slightly rounded at the posterior angles, a little convex, broader than long by about one-quarter, smooth and shining, with a short, longitudinal frontal sulcus. Pronotum more than half as broad again anteriorly as long, a little narrowed posteriorly, very sparsely and finely punctured, with larger setigerous punctures on the anterior and lateral margins, the anterior margin very broadly and shallowly emarginate, the anterior angles prominent and sub-tuberculate. Scutellum and median segment sparsely punctured; the scutellum not very narrow; the median segment a little shorter than the scutellum, broadened from the base and almost vertically truncate posteriorly. First abdominal segment truncate anteriorly, the dorsal surface divided into two almost equal parts by a transverse carina; the basal portion coarsely but rather sparsely punctured, the apical portion depressed and almost without punctures, the apical margin slightly raised; second segment with five strongly raised transverse carinæ including the raised apical margin; segments 3-5 smooth at the base, coarsely but sparsely punctured at the apex; fifth ventral segment coarsely longitudinally striated. Pygidium sharply deflexed, long and almost linear, slightly broadened at the apex into a narrow, elongate-ovate surface; both the dorsal and ventral plates very narrowly rounded at the apex; a tuft of golden hairs on each side near the base.

Black; the thorax and median segment ferruginous red; the mandibles at the base, the apex of the scape, and the anterior tibiæ and tarsi beneath ferruginous.

Length 11 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. February.

"*Eucalyptus* bloom. Rare, only one pair seen." (*Giles*.)

This is not very close to typical *Thynnoides*, the male being without the concave coxæ. It is perhaps nearer to the *melleus* group.

CAMPYLOTHYNNUS ASSIMILIS Sm.

Thynnus assimilis Sm. Cat. Hym. B. M. vii. p. 20 (1859), ♂.

Thynnus flavofasciatus Sm. Cat. Hym. B. M. vii. p. 45 (1859), ♀.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop.

This species is most nearly allied to *T. flavopictus* Sm.

ELIDOTHYNNUS AGILIS Sm.

Thynnus agilis Sm. Cat. Hym. B. M. vii. p. 20 (1859), ♂.

♀. Clypeus without a carina; mandibles rather flattened, with a very small tubercle near the middle of the inner margin. Front sparsely but coarsely punctured and very sparsely clothed with greyish hairs, vertex shining, very sparsely and finely punctured; the head broader than long, rounded at the posterior angles. A short and obscure longitudinal sulcus between the antennæ; the scape smooth above, punctured beneath, with a few long grey hairs. Pronotum half as broad again anteriorly as long, narrowed a little posteriorly, sparsely punctured, with a row of punctures along the anterior margin, all the punctures piliferous. Median segment sparsely punctured, half as long as the pronotum, broadened from the base, obliquely truncate posteriorly, the surface of the truncation almost smooth. Abdomen very sparsely punctured, the segments smooth at the base and apex, the sides and apex of the abdomen thinly clothed with long grey pubescence; the basal segment with a transverse carina strongly emarginate posteriorly before the apex, the apical margin broadly depressed; second segment with four transverse carinæ on the basal portion, the space between the raised apical margin and the carinæ finely transversely striated; fifth ventral segment longitudinally striated. Pygidium long and very narrow; the basal portion long and strongly compressed, bearing two or three longitudinal carinæ; deflexed obliquely posteriorly and broadened, the surface narrowly elongate-ovate; the dorsal plate with a median carina not reaching the apex which is trilobed; the ventral plate narrower than the dorsal and rounded at the apex. Intermediate tibiæ no thicker than the posterior, basal joint of the intermediate tarsi normal.

Black; the head and legs ferruginous; the middle of the ventral abdominal segments and the pygidium fusco-ferruginous; a tuft of long golden hairs on each side of the pygidium.

Length 12–14 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. January and February.

“*Eucalyptus* bloom. Rare.” (*Giles*.)

ELIDOTHYNNUS MOBILIS, sp. n.

♂. Clypeus sparsely punctured, rather broadly truncate at the apex. Head, pronotum, mesonotum, and median segment finely and closely punctured, scutellum and abdomen more sparsely and strongly punctured. Interantennal prominence V-shaped; the antennæ stout, of even thickness throughout, as long as the thorax and median segment combined. Median segment obliquely depressed from the postscutellum, rounded at the sides. Abdomen elongate, tapering slightly at the extremities. Seventh dorsal segment deflexed, coarsely punctured and truncate at the apex, without a flattened plate. Hypopygium short, only projecting a little beyond the dorsal segment, produced into

lateral angles near the base but not toothed, thence triangular to the base of the short apical spine.

Black; the clypeus, the orbits of the eyes narrowly, broadly interrupted at the summit, the apex of the interantennal prominence, a broad arched band on the pronotum, a quadrate spot on the mesonotum, another on the scutellum, a transverse band on the postscutellum, a spot on the mesopleuræ below the anterior wings, the tegulæ, a large spot on each side of the six basal dorsal segments of the abdomen and on each side of ventral segments 2-5, yellow; femora, tibiæ, and tarsi ferruginous. Wings hyaline, tinged with yellow, nervures fuscous.

Length 17 mm.

♀. Clypeus without a carina; the mandibles broad and rather stout. Head half as broad again anteriorly as long, strongly rounded at the posterior angles, very slightly convex, thin, shining, very sparsely and finely punctured both on the vertex and front; a well-marked longitudinal sulcus on the front. Thorax rather closely punctured, the pronotum much more finely than the median segment; the pronotum nearly twice as broad as long, the sides almost parallel, with a row of long grey hairs on the anterior margin. Median segment no longer than the scutellum, broadened from the base and obliquely truncate posteriorly, the surface of the truncation shining, with a few scattered punctures. Abdominal segments smooth at the base; the first segment truncate anteriorly, with a row of setigerous punctures above the base of the truncation, the apical margin broadly depressed, leaving a raised mark strongly emarginate in the middle and rounded at the sides before the depression; second segment with three transverse carinæ near the base, the space between the raised apical margin and the carinæ indistinctly transversely striated; third segment depressed at the apex as in the first segment, the raised mark before the depression very sparsely punctured near the apex; fourth and fifth segments closely punctured at the apex; fifth ventral segment longitudinally and coarsely striated. Pygidium deflexed, very long and narrow, almost vertically truncate posteriorly, compressed and linear before the truncation, the surface of the truncation very narrowly elongate-ovate; the dorsal plate trilobed at the apex; the ventral plate extending beyond the dorsal and narrowly rounded at the apex.

Black; the mandibles at the base, clypeus, scape, vertex, pygidium, the middle of the second dorsal segment, the depressed apical margin of the first and third segments, and the extreme apex of the fourth and fifth fusco-ferruginous; legs and the whole ventral surface light testaceous brown. A tuft of golden hairs on each side of the pygidium. Basal joint of intermediate tarsi not broadened.

Length 12 mm.

Hab. Guildford, W. A. (*H. M. Giles*). ♂ ♀ in cop. December.

"On *Leptospermum* bloom. Scarce." (*Giles*.)

Allied to *melleus* Westw. and also to *insidiator* Sm. and *agilis* Sm., from the last of which the male is hardly distinguishable by any constant character, though the size is different. But the female has the head somewhat broader than in *agilis*, the pygidium narrower, and the sculpture different. In the male the yellow marks on the abdomen are less extensive than in *agilis*, the spot on the mesonotum is more developed, being often entirely absent in *agilis*, and the angles at the base of the hypopygium are somewhat less prominent in the present species.

ELIDOTHYNNUS BASALIS Sm.

Thynnus basalis Sm. Cat. Hym. B. M. vii. p. 23 (1859), ♂.

A long series of this species and of *T. tuberculifrons* Sm. sent by Mr. Giles, who states that they are two of the commonest species in the neighbourhood of Perth and that the females seem to him to be identical. The females sent are similar to that previously described by me from a damaged specimen as the female of *T. tuberculifrons* Sm., but the low carina on the pronotum is absent. I am therefore driven to the conclusion that the specimens with the red abdomen (*basalis*) and those with the black abdomen (*tuberculifrons*) are two forms of the same species distinct from *vastator* Sm., though intermediate colour-varieties do not seem to occur. One specimen, apparently identical with *basalis*, is, however, paired with a female closely resembling that described by Smith as *vastator*, though differing in the presence of four raised carinæ instead of three at the base of the second dorsal segment. I have dissected out the genitalia of *basalis* and *tuberculifrons*, and can find absolutely no difference.

LESTRICOTHYNNUS CONSTRICTUS Sm.

Thynnus constrictus Sm. Cat. Hym. B. M. vii. p. 19 (1859), ♂.

♀. Clypeus with an obscure carina at the base, the anterior margin feebly and very broadly rounded; mandibles stout and rather short. Head moderately convex, rather large, nearly as long as broad, rounded at the posterior angles, shining, very sparsely and shallowly punctured, with a short, longitudinal, frontal sulcus; three large punctures in a triangle on the vertex. Thorax very finely and sparsely punctured, a row of deeper punctures each bearing a seta along the anterior margin of the pronotum, which is narrower than the head, nearly rectangular and almost twice as broad as long. Median segment a little longer than the scutellum, broadened from the base and abruptly truncate posteriorly, deeply and rather closely punctured, the surface of the truncation almost smooth. Abdomen very sparsely and finely punctured, the first segment with the apical margin raised and a deep transverse groove before it; the second segment with about eight transverse carinæ including the raised apical margin, the six basal carinæ low and more or less irregular, the two apical carinæ higher and regular; fifth segment more closely punctured.

Ventral surface more closely and coarsely punctured, the fifth segment coarsely longitudinally striated. Pygidium long and very narrow, linear at the base; sharply deflexed posteriorly and very narrowly elongate-ovate, with a short but strong longitudinal carina at the base. Basal joint of intermediate tarsi normal.

Ferruginous brown; the apex of the mandibles, median segment, the apical half of the third dorsal abdominal segment, and the whole of the fourth, fifth, and sixth segments black.

Length 13 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop.

"On *Leptospermum* bloom."

A male of this species was sent by Mr. Giles paired with a female of *C. assimilis* Sm. taken on *Eucalyptus ficifolia*. He states that cross-pairing is occasionally met with in the Thynnidae.

LESTRICOTHYNNUS OPTIMUS Sm.

Thynnus optimus Sm. Cat. Hym. B. M. vii. p. 29. n. 74 (1859), ♂.

Thynnus (Aeolothynnus) optimus Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 125 (1908), ♂.

This should probably be placed in the section of the genus near *nubilipennis* Sm., though differing in the more flattened abdomen, the shape of the hypopygium, and in the position of the second recurrent nervure, which is strongly curved and received very near the base of the third cubital cell. Except in the latter character it is very near *L. illidgei* described below. *L. sulcatus* Sm. is most probably the female of this species, being allied to the female of *L. illidgei*, but the very fragmentary condition of the type renders close comparison in some points impossible.

LESTRICOTHYNNUS ILLIDGEI, sp. n.

♂. Clypeus convex in the middle, produced and rather broadly truncate on the apical margin, very finely and sparsely punctured, with a slightly depressed mark on each side before the apex, pointed at the base and connected with the interantennal prominence by a short carina; the labrum projecting slightly beyond the clypeus and broadly rounded at the apex. Palpi slender, but not elongate; the basal joint of the labial palpi about as long as the second and third combined. Antennæ longer than the thorax and median segment combined, the apical joints very feebly arcuate and a little slenderer than the others; the distance between the antennæ at the base rather less than that between the base of the antennæ and the eyes. Head small, opaque and closely punctured, broader than the pronotum; the interantennal prominence V-shaped. Pronotum shining and almost smooth, the anterior margin very slightly raised; mesonotum closely punctured, less closely so on the disc than on the sides, with the usual two longitudinal sulci on each side. Scutellum and median segment shining, shallowly and rather sparsely punctured; the scutellum

convex and rather broadly truncate at the apex; median segment rounded, a little longer than broad. Abdomen elongate, the sides nearly parallel, the segments not strongly convex above; segments 2-4 marked with a depressed transverse line close to the base, but not appreciably constricted; the segments closely and rather shallowly punctured; the basal segment longer than the breadth at the apex, with a longitudinal sulcus from the base to beyond the middle. Seventh dorsal segment narrow, much longer than broad and very narrowly rounded at the apex, the apical half rugose. Hypopygium small, without basal spines, ending in a spine which alone projects beyond the dorsal segment and is sometimes feebly recurved. Second recurrent nervure received by the third cubital cell just before one-third from the base.

Black; the mandibles (except at the apex), clypeus, the margins of the eyes very broadly, narrowing on the inner margin and not quite reaching the summit, the band on the outer margin more narrowly continued and undulating on the posterior margin of the head, the interantennal prominence, the margins of the pronotum, the pleurae, coxae beneath, tegulae and a line above them, a spot bifurcate anteriorly on the disc of the mesonotum, scutellum, post-scutellum, an oblique band curved at the apex on each side of the median segment and a broad transverse band, broadly interrupted in the middle, on both dorsal and ventral segments 1-6 of the abdomen, represented on the first ventral segment by a triangular spot, yellow; the seventh segment and the femora, tibiae, and tarsi dull ferruginous. Wings hyaline, with a small fuscous cloud at the apex of the radial cell; nervures fuscous, the stigma fusco-ferruginous.

Length 14-15 mm.

♀. Mandibles rather broad and flattened, pointed at the apex; the clypeus small, without a carina. Head half as broad again as long, rounded at the posterior angles, smooth and shining, with a longitudinal frontal sulcus and a large shallow depression on each side reaching more than halfway from the base of the antennae to the vertex. Thorax and median segment closely and rather finely punctured; the pronotum twice as broad as long, nearly as broad as the head, the sides nearly parallel; scutellum not very narrow, rounded at the apex; median segment very short, obliquely truncate posteriorly. Abdomen broader than the thorax; the first segment with a broad, shallow, transverse groove close to the apex, the second segment with four strong transverse carinae and the apical margin raised; the first, third, fourth, and fifth segments closely and finely punctured and covered with short greyish pubescence. Pygidium truncate posteriorly, narrow at the base but not contracted at the base of the truncation, the surface of the truncation elongate-ovate with three longitudinal carinae at the base, the apex smooth and shining; the hypopygium extending far beyond the epipygium. Fifth ventral segment rugose.

Black; the flagellum, the tibiae and tarsi, the dorsal surface of the first abdominal segment, the sides of the other segments, and

a transverse band near the base of segments 3-5 obscure creamy yellow. The colour is very variable.

Length 8-9 mm.

Hab. Mooraree, near Brisbane, Q. (*R. Illidge*).

On *Leptospermum* blossom. 5 pairs in cop.

Near *L. optimus* Sm. from Western Australia, and related, though less nearly, to *L. nubilipennis* Sm. The female is related to *L. sulcatus* Sm., but the depressions on the head are much smaller and shallower than in that species.

LESTRICOTHYNNUS SUBTILIS, sp. n.

♂. Clypeus strongly convex, broadly truncate at the apex, very coarsely punctured, with a low carina from the base to the apex. Head punctured-rugose, the interantennal prominence very broadly truncate at the apex; antennae inserted further from each other than from the eyes, as long as the thorax and median segment combined and of nearly even thickness throughout. Thorax and median segment very finely and closely punctured, most finely on the pronotum and median segment; the pronotum narrower than the head, the anterior margin very slightly raised, the posterior margin almost smooth; median segment rounded. Abdomen elongate, rather slender, tapering a little at the extremities, the segments not constricted, very closely and finely punctured, the sixth ventral segment without spines; dorsal plate of the seventh segment flattened, triangular, and longitudinally striated. Hypopygium short, scarcely projecting beyond the dorsal segment, broadly triangular, with a short apical spine. Second abscissa of the radius longer than the third; second recurrent nervure received near the base of the third cubital cell.

Black, with short white pubescence on the sides of the thorax and abdomen. Wings pale fusco-hyaline, nervures fuscous.

Length 19 mm.

♀. Clypeus without a carina, smooth and shining. Head closely microscopically punctured, twice as broad as long, rounded at the posterior angles, with a delicate, longitudinal, frontal sulcus. Pronotum rectangular, more than half as broad again as long, narrower than the head, finely and sparsely punctured, with a few setigerous punctures on the anterior margin; scutellum transverse, about three times as broad as long; median segment obliquely truncate from just behind the scutellum, very minutely punctured. Abdomen sparsely and shallowly punctured; the second segment with a low transverse carina at the base and two higher carinae, rather widely separated from each other, at the apex, one being formed by the raised apical margin, the space between them and the basal carina with about four low, ill-defined, undulating and broken carinae. Fifth ventral segment coarsely longitudinally striated. Pygidium vertically truncate posteriorly, the face of the truncation rather narrowly ovate and coarsely longitudinally striated; the ventral plate extending a little

beyond the dorsal, without any constriction at the base. First joint of the intermediate tarsi slender; tarsal unguis small, bidentate.

Entirely castaneous brown, varying in darkness according to the age of the specimen.

Length 10–11 mm.

Hab. Claremont, W. A. (*H. M. Giles*). ♂ ♀ in cop. December.
2 ♂. 2 ♀.

Allied to *L. vigilans* Sm.

LESTRICOTHYNNUS (?) *TENUATUS* Sm.

Thynnus (*Agriomyia*) *tenuatus* Sm. Cat. Hym. B. M. vii. p. 31 (1859), ♂.

Thynnus (*Lophocheilus*) *tenuatus* Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 173 (1908), ♂.

♀. Clypeus without a carina. Head subopaque, very minutely and closely punctured, the cheeks and vertex shining and almost smooth, with a short and obscure longitudinal frontal sulcus, more than half as broad again anteriorly as long, the posterior angles strongly rounded. Pronotum sparsely punctured, with a row of large setigerous punctures on the anterior margin, broader than long and slightly narrowed posteriorly. Scutellum sparsely punctured. Median segment shorter than the scutellum, very minutely and closely punctured, broadened from the base and steeply sloped posteriorly. First abdominal segment concavo-truncate anteriorly, the dorsal surface shining and sparsely punctured, the apical margin raised slightly, with a narrow groove before it; second segment with about eight more or less irregular transverse carinae, including the raised apical margin, the carinae at the base much lower than those at the apex; segments 3–5 finely and rather closely punctured, delicately aciculate at the base, narrowly smooth at the apex; fifth ventral segment coarsely longitudinally striated. Pygidium not very narrow at the base, vertically truncate posteriorly, with arched carinae above the base of the truncation, the surface of the truncation ovate, narrowly truncate at the apex, and with four strongly raised arched carinae on the basal half. The intermediate tibiae are thickened and spinose, but the basal joint of the intermediate tarsi is not unusually broad.

Fusco-ferruginous, the second, fourth, fifth, and apical segments of the abdomen almost black.

Length 11 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. November.

"On *Leptospermum* bloom. Very rare." (*Giles*.)

The female seems more nearly allied to *crudelis* Turn. than to any other, although the male is without spines on the sixth ventral segment. It does not seem to be well placed either in the *Agriomyia* or *Lophocheilus* groups.

TACHYNOTHYNNUS PICIPES Westw.

Thynnus picipes Westw. Arc. Ent. ii. p. 114 (1844), ♂.

Specimens of the male sent by Mr. Giles have the legs black and the wings rather darker than in the typical form. One specimen has the apex of the first abdominal segment dull ferruginous.

♀. Mandibles stout, acute at the apex, with a small tooth near the middle of the inner margin. Clypeus without a carina. Head coarsely punctured on the front, the punctures piliferous, smooth and shining on the vertex, nearly half as broad again as long, the posterior angles rounded, slightly narrowed anteriorly, scarcely convex. Pronotum nearly as broad as the head, more than half as broad again as long anteriorly, a little narrowed posteriorly, the anterior margin not quite straight, very shallowly emarginate, sparsely punctured on the sides, smooth in the middle, a row of large setigerous punctures along the anterior margin. Scutellum and median segment sparsely punctured, the median segment as long as the scutellum, broadened from the base and almost vertically truncate posteriorly. First dorsal segment of the abdomen coarsely punctured-rugulose, the apical margin a little raised, with a broad groove before it; second segment with about eight transverse carinae including the raised apical margin, those near the base lower, the apical margin with a very broad groove before it; segments 3-5 shining, sparsely punctured at the apex. Pygidium obliquely deflexed, narrow at the base, gradually broadened to the apex, elongate-triangular, with strong transverse carinae, slightly arched; the ventral plate rounded at the apex and expanding on each side of the dorsal. A tuft of hairs on each side springing from below the apex of the fifth segment. Fifth ventral segment rugose, with oblique curved striae at the apex. Intermediate tibiae thick and spinose, basal joint of intermediate tarsi not flattened.

Black; head, middle of the pronotum, second abdominal segment, and the spines of the tibiae and tarsi fusco-ferruginous.

Length 14 mm.

Hab. Cottesloe, near Fremantle, W. A. (*H. M. Giles*). ♂ ♀ in cop. December.

"On *Eucalyptus* bloom."

The female, as would be expected, is near the *shuckardi* group.

POGONOTHYNNUS (?) WALKERI Turn.

Thynnus walkeri Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 236 (1908), ♂.

♀. Clypeus without a carina. Head finely and sparsely punctured, shining, with a short, longitudinal, frontal sulcus, slightly convex, half as broad again as long. Pronotum as broad as the head, nearly twice as broad as long, the sides almost parallel, smooth and shining, with a few minute scattered punctures and a row of deeper setigerous punctures along the straight anterior

margin. Scutellum very sparsely punctured, slightly depressed on the middle of the apical margin; median segment more closely and coarsely punctured, less than half as long as the scutellum, steeply sloped and almost smooth posteriorly. First abdominal segment concavo-truncate anteriorly, the dorsal surface with two well-marked transverse carinæ at the apex and two or three ill-defined transverse striæ before them; second segment with six strong transverse carinæ including the raised apical margin; segments 3-5 smooth at the base, very sparsely punctured near the apex; fifth ventral segment coarsely obliquely striated. Pygidium deflexed from the base and smooth, truncate posteriorly, the surface of the truncation twice as long as broad, the sides nearly parallel, the apical margin deeply and broadly emarginate; the dorsal plate reaching beyond the ventral, smooth and opaque, with a short transverse carina close to the base; the pygidium narrow and subconcavely depressed just before the base of the truncation.

Ferruginous brown, the abdomen fuscous or fusco-ferruginous.

Intermediate tibiae broad and swollen, basal joint of intermediate tarsi slightly broadened.

Length 9 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. February.

"On *Melaleuca* bloom. Rare." (*Giles*.)

The shape of the pygidium is remarkable. This species is doubtfully distinct from *morosus* Sm.

POGONOTHYNNUS VESTITUS Sm. (Plate XXXI. figs. 9 ♂, 10 ♀.)

Thynnus vestitus Sm. Cat. Hym. B. M. vii. p. 15 (1859), ♂; Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 209 (1908), ♂.

♂. The hypopygium of the male is lanceolate beyond the basal spines, long and narrow, ending in an acute spine; similar in shape to that of *fenestratus* Sm. In the type, the only specimen I had seen until Mr. Giles' collection came to hand, the hypopygium was broken.

♀. Head not quite half as broad again as long, slightly convex, not thick, rounded at the posterior angles, very sparsely and shallowly punctured, shining, the front coarsely punctured in the middle; a small arched concave space above the base of each antenna extending nearly to the eye. Clypeus without a carina; scape of the antennæ very finely and sparsely punctured. Pronotum a little narrower than the head, much broader anteriorly than long, but very little broader posteriorly than long; broadly emarginate anteriorly, with a row of setigerous punctures along the margin; the remainder of the pronotum shining and almost smooth. Pleuræ smooth and shining; scutellum narrowed posteriorly, smooth in the middle, punctured on the sides. Median segment shorter than the scutellum, broadened from the base and abruptly truncate posteriorly, almost smooth in the middle and on the face of the truncation, punctured on the sides. Abdomen

stout; the first segment truncate at the base, as broad as the second, the dorsal surface with six strong transverse carinæ including the recurved apical margin; the second segment with the same number of carinæ; segments 3-5 shining, with a few scattered punctures. Fifth ventral segment with strong broadly curved striæ. Pygidium narrowed at the base, with two or three arched carinæ; steeply sloped posteriorly, with three arched carinæ at the base of the truncation; the dorsal plate not reaching to the apex of the ventral, broadened from the base and truncate at apex; the ventral plate rounded at the apex. Intermediate tibiæ very broad.

Length 11-13 mm.

Hab. South Perth, W. A. (*H. M. Giles*). 4 pairs in cop. March.

"On *Leptospermum* bloom; not common." (*Giles*.)

The male hypopygium is of the same shape as that of *fenestratus* Sm., and the sculpture of the two basal dorsal segments of the female is very similar, though there is one carina less on each segment in *fenestratus*. That species also has lateral lobes at the apex of the dorsal plate of the pygidium, and the number of the arched carinæ on the plate is greater.

ZASPILOTHYNNUS TRILOBATUS, sp. n.

♂. Clypeus rather prominent at the base, then almost vertically depressed and broadly truncate at the apex, longitudinally striated, punctured on the sides. Head closely punctured, finely rugose on the front; the interantennal prominence very broadly rounded at the apex, connected with the base of the clypeus by a short carina; a fine longitudinal carina below the anterior ocellus. Antennæ inserted a little further from each other than from the eyes, scarcely as long as the thorax without the median segment, and of almost even thickness throughout. Thorax, median segment, and abdomen closely punctured, more finely on the median segment and abdomen than on the thorax; the pronotum punctured-rugulose, slightly narrowed anteriorly, the anterior margin strongly raised; median segment rounded at the sides, obliquely flattened posteriorly, with a shallow sulcus from the base to the middle. Abdominal segments 2-5 moderately constricted at the base, with a curved, slightly raised mark on each side close to the apical margin; the abdomen elongate, tapering at the extremities. Sixth ventral segment with an acute spine on each side at the apical angles; seventh dorsal segment produced from the base into a flattened plate, longitudinally striated and truncate at the apex. Hypopygium with a blunt tooth on each side at the basal angles, thence produced in an elongate-triangular form and narrowly rounded at the apex, transversely striated above, with an obscure longitudinal carina and without an apical spine. The anterior coxæ are not concave, and the groove between the first two ventral segments of the abdomen is shallow, the second segment without a tubercle at

the base. The second recurrent nervure is received just before one-quarter from the base of the third cubital cell.

Black with sparse grey pubescence; the apical abdominal segment ferruginous red. Wings hyaline, nervures black.

Length 13 mm.

♀. Clypeus without a carina, transverse. Head subrectangular, slightly rounded at the posterior angles, more than half as broad again as long, sparsely but coarsely punctured. Pronotum sparsely punctured, with a row of large setigerous punctures on the anterior margin, nearly twice as broad anteriorly as long, slightly narrowed posteriorly. Scutellum very sparsely, median segment more closely punctured, as long as the scutellum, broadened from the base and obliquely truncate posteriorly, the surface of the truncation very minutely and closely punctured. First abdominal segment closely punctured, smooth at the extreme apex and with the apical margin slightly raised, with a shallow groove before it; second segment with about eight irregular transverse carinae, lowest at the base, including the raised apical margin, which is further from the other carinae than they are from each other; third and fourth segments smooth at the base and apex, punctured in the middle; fifth dorsal segment smooth at the base, sparsely punctured in the middle, with a few delicate curved striae at the apex; fifth ventral segment coarsely longitudinally striated. Pygidium not very narrow at the base, obliquely sloped posteriorly and slightly broadened, with three **A**-shaped carinae at the base of the slope, the apex of the dorsal plate strongly trilobed, the ventral plate extending much beyond the dorsal, rounded at the apex, with a very feeble emargination in the middle.

Black; the two apical segments ferruginous red.

Length 10 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. 2 ♂, 2 ♀. October.

"On *Leptospermum* and *Stypelia* bloom. Rare." (*Giles*.)

Nearly allied in structural details to *Z. pseustes* Turn.

A male in the Berlin Museum, from Adelaide, has the apex of the sixth dorsal segment red and the flattened dorsal plate of the seventh less strongly striated.

ZASPILOTHYNNUS CRUDELIS Turn.

Thynnus crudelis Turn. Proc. Linn. Soc. N.S.W. xxxiii. pp. 83, 238 (1908), ♂.

? *Enteles wagneri* Schulz, Fauna Südwest Australiens, i. 13, p. 452 (1908), ♂.

♀. Clypeus without a carina. Head more than half as broad again anteriorly as long, strongly rounded at the posterior angles, strongly but not very closely punctured, with a short and almost obsolete longitudinal frontal sulcus. Pronotum almost rectangular, about one-quarter broader than long, finely, but not very closely punctured, with a few scattered grey hairs, longest on the

anterior margin. Median segment finely and closely punctured, more than half as long as the pronotum, broadened from the base and obliquely truncate posteriorly, the surface of the truncation microscopically punctured. First abdominal segment concavo-truncate anteriorly, the dorsal surface coarsely rugose; second segment with about nine irregular transverse carinæ, including the strongly raised apical margin, the apical carinæ much higher than the basal; segments 3-5 smooth or very delicately aciculate at the base, finely and closely punctured at the apex; fifth ventral segment coarsely longitudinally striated. Pygidium not very narrow at the base, vertically truncate posteriorly, with about four arched carinæ before the base of the truncation, the surface of the truncation elongate oval, smooth, with two arched carinæ at the base, the ventral plate extending beyond the dorsal and both rounded at the apex.

Dark fuscous brown; head and legs dull ferruginous; pronotum and pygidium fusco-ferruginous.

Length 10 mm.

Hab. Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. October.

"On *Stypelia* bloom. Rare." (*Giles*.)

Very similar to *trilobatus* in general appearance, but the hypopygium of the male and pygidium of the female are very different.

I am not sure which name has priority for this species. Schulz's description was published apparently late in June, though no date is given; whereas my diagnosis in the key to the species appeared early in June, though the full description did not appear until August. I feel little doubt that the descriptions refer to the same species, though Schulz does not give any notice of an apical spine on the hypopygium either in the text or the figure; but this spine is very liable to be broken in many species. The species is in no way connected with *Enteles*, in which the males always have the apical spine strongly recurved as in *Rhagigaster*.

ZASPILOTHYNNUS LIGNATUS, sp. n.

♂. Clypeus strongly convex, coarsely punctured, with a low median carina not reaching the apex, produced and rather broadly truncate at the apex, the apical margin obliquely depressed and smooth; labrum prominent, broad and feebly bilobed. Head closely punctured-rugose, the interantennal prominence rounded at the apex; antennæ a little longer than the thorax and median segment combined, the apical joint more slender than the others. Thorax finely and very closely punctured; the pronotum nearly as broad as the head, the anterior margin slightly raised; scutellum subtriangular, narrowly truncate at the apex. Median segment short, very finely punctured-rugulose. Abdomen elongate, tapering slightly at the extremities, very finely and closely punctured; the segments very feebly constricted at the base, the first dorsal segment with a tubercle at the base, the sixth segment more sparsely and coarsely punctured; the seventh deflexed, very

broadly rounded at the apex, with strong curved transverse striae. Hypopygium subtriangular; the basal angles bluntly produced, the apex narrowly rounded, without a spine. Second abscissa of the radius shorter than the third; second recurrent nervure received at one-quarter from the base of the third cubital cell. Sixth ventral segment with a very short spine at the apical angles.

Black; legs fusco-ferruginous. Wings hyaline, the radial cell clouded with fuscous along the costa; nervures black.

Length 22-24 mm.

♀. Clypeus without a carina, truncate at the apex, shining, with a few scattered punctures. Head rather small, half as broad again as long, rounded at the posterior angles, deeply punctured, the front closely, the vertex rather sparsely, the punctures bearing short grey hairs. Pronotum rectangular, half as broad again as long, sparsely and deeply punctured, the punctures along the anterior margin setigerous, the pronotum quite as broad as the head; scutellum and median segment coarsely punctured; the scutellum broader than long, as long as the median segment. First dorsal segment of the abdomen coarsely punctured, the apical margin raised, with a transverse groove before it; second segment with five well-marked transverse carinae including the raised apical margin; segments 3-5 smooth at the base, sparsely punctured at the apex. Fifth ventral segment coarsely transversely striated. Pygidium rather narrow, deflexed and truncate posteriorly, with five arched striae at the base, slightly widened to the apex and more than three times as long as broad. Intermediate tibiae moderately thickened, basal joint of intermediate tarsi slightly broadened.

Black; with sparse white pubescence on the sides of the abdomen; mandibles, legs, pygidium, and carinae of the second dorsal segment fusco-ferruginous.

Length 13 mm.

Hab. Claremont, W. A. (*H. M. Giles*). ♂ ♀ in cop. 2 ♂, 2 ♀. December.

"On *Eucalyptus* bloom. Rare."

ZASPILOTHYNNUS DILATATUS Sm.

Thynnus dilatatus Sm. Cat. Hym. B. M. vii. p. 43 (1859), ♀.

Thynnus atrox Turn. Proc. Linn. Soc. N.S.W. xxxiii. p. 237 (1908), ♂.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. November.

"On *Leptospermum*, occasionally on *Eucalyptus*. One of our commonest species." (*Giles*.)

ZASPILOTHYNNUS NEGLECTUS, sp. n.

Extremely near *Z. novae* Sauss. in both sexes, but differs as follows:—

♂. The delicate frontal sulcus is longer, reaching from the anterior ocellus to the apex of the interantennal prominence; the

hypopygium is much more broadly triangular, with the basal angles rounded and not produced into lobes.

♀. Anterior margin of the pronotum more strongly emarginate; intermediate tibiæ thicker, very broad, though they are considerably thickened in *novaræ*; pygidium strongly constricted at the base of the truncation, the surface of the truncation very broadly ovate, nearly as broad in the middle as long; the apical half smooth, the basal half marked with five A-shaped carinæ as in *novaræ*.

Length, ♂ 15 mm., ♀ 12 mm.

Hab. New South Wales (*Staudinger*). Types in B. M. ex coll. Turner. A female in the Berlin Museum.

The species in this group are very closely allied, *Z. novaræ* being intermediate between *pseustes* Turn. and *neglectus*. *Z. pseustes* has the clypeus yellow and less strongly sculptured in the male, while the pygidium of the female has lateral lobes near the apex and is a more slender insect.

Z. dilatatus Sm. is also closely allied, the intermediate tibiæ of the female being much thickened and the truncation of the pygidium broad as in *neglectus*, but the pygidium is not contracted before the truncation.

ZASPILOTHYNNUS NIGRIPES Guér.

Thynnoides nigripes Guér. Mag. de Zool. xii. p. 10 (1842), ♂.

♂. Clypeus punctured-rugose, moderately convex, the apical margin straight but not very broad; antennæ as long as the thorax without the median segment, of even thickness throughout; the interantennal prominence bilobed. The whole insect closely punctured, with sparse greyish-white pubescence. Median segment not truncate, broad, with an obscure median sulcus. Abdomen elongate; segments 2-5 with an impressed transverse line near the base, the base of the segments before the line almost smooth. Second ventral segment with a tubercle at the base; a spine on each side at the apical angles of the sixth ventral segment. Seventh dorsal segment without a produced flattened plate, the basal portion marked with strong rounded striæ, the apex strongly deflexed and transversely striated. Hypopygium elongate-triangular, with prominent basal angles, the apical spine feebly recurved.

Black. Wings hyaline faintly flushed with purple, nervures black.

Length 20-22 mm.

♀. Clypeus without a carina; head and pronotum deeply but rather sparsely punctured, more closely on the front; head moderately thick, much broader than long; the eyes separated from the base of the mandibles by nearly half their own length. Pronotum subrectangular, slightly narrowed posteriorly, nearly twice as broad as long, the punctures on the anterior margin deep and setigerous. Scutellum sparsely punctured; median segment minutely and closely punctured, with a few large scattered

punctures, as long as the scutellum and broadened from the base, the surface of the posterior truncation almost smooth. First abdominal segment truncate at the base, sparsely punctured immediately above the truncation, then irregularly transversely striated, the striae low and about four in number, the apical margin raised, with a deep groove before it; second segment with many transverse striae, the striae irregular and more than twelve in number, the basal striae very low, those near the apex moderately elevated; segments 3-5 smooth at the base, sparsely punctured at the apex; fifth ventral segment coarsely longitudinally striated. Pygidium not much narrowed at the base, obliquely striated near the base, deflexed posteriorly; the posterior surface ovate, with three or four arched carinae at the base; the extreme apex of the dorsal plate smooth, rounded and slightly recurved, not reaching to the apex of the ventral plate.

Black; head and prothorax ferruginous red; sometimes the scutellum is red also.

Length 15-17 mm.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. 5 ♂, 3 ♀. January and February. One female in the Berlin Museum from Western Australia.

ZASPILOTHYNNUS RADIALIS, sp. n. (Plate XXXI. fig. 11, ♂.)

♂. Clypeus large, rather prominent and almost pointed at the base, broadly truncate at the apex, finely longitudinally striated. Antennae shorter than the thorax and median segment combined, of even thickness throughout; the interantennal prominence broadly V-shaped. Head closely punctured, a very fine longitudinal carina from the apex of the interantennal prominence almost reaching the anterior ocellus. Posterior ocelli a little further from the eyes than from each other. Pronotum shallowly and not very closely punctured, nearly as broad as the head, only slightly narrowed anteriorly, the anterior margin straight and raised. Mesonotum closely, scutellum sparsely punctured. Median segment obliquely truncate from the postscutellum, very finely and closely punctured on the sides, shallowly punctured-rugulose on the surface of the truncation. Abdomen shallowly punctured, the segments not constricted, as long as the head and thorax combined, slightly narrowed at the base and apex; the sixth ventral segment with an acute spine on each side at the apical angles. Dorsal plate of the seventh segment flatly produced and rounded at the apex. Hypopygium obliquely striated above, longer than broad, with a short outwardly curved spine on each side at the base, then sharply narrowed and produced with almost parallel sides to the base of the acute apical spine. The groove between the two basal ventral segments is very shallow. Second and third cubital cells nearly equal in length on the radial nervure, the second recurrent nervure received by the third cubital cell at one-fifth from the base.

Orange-yellow; antennae, the extreme apex of the mandibles,

vertex, mesonotum except a quadrate spot near the middle, mesopleura except a spot beneath the anterior wings, mesosternum and the two apical abdominal segments, black. Wings hyaline, tinged with yellow, the radial cell clouded with fuscous; nervures black, except at the base; stigma and costa ferruginous.

Length 18 mm., exp. 28 mm.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*).

This comes nearest to the genus *Zaspilothynnus* Ashm., but is a smaller and slenderer insect than *leachiellus* Westw.

ZASPILOTHYNNUS GILESII, sp. n. (Plate XXXI. figs. 12 ♂, 13 ♀.)

♂. Clypeus large, broadly truncate at the apex, the labrum projecting beyond the clypeus and narrowly truncate at the apex; the clypeus punctured at the extreme base, finely longitudinally striated at the apex, the striae arching narrowly above the middle. Head closely punctured-rugose; the interantennal prominence broadly rounded at the apex and connected with the base of the clypeus by a very short carina. Antennae as long as the thorax and median segment combined, of almost even thickness throughout. A few long hairs on the outer margin of the maxillae. Thorax finely and closely punctured; the middle of the pronotum finely rugulose, the anterior margin slightly raised; the longitudinal furrows on the mesonotum deeply marked; scutellum large and slightly convex. Median segment obliquely truncate from just behind the postscutellum, the surface of the truncation shining and finely rugulose, the sides of the segment sparsely clothed with long whitish pubescence. Abdomen finely and closely punctured, a little longer than the head and thorax combined; the basal segment obliquely truncate anteriorly, narrower at the base than at the apex, as broad at the apex as the second segment; the apical dorsal segment produced into a flattened plate, which is longitudinally striated and rounded at the apex. The groove between the two ventral segments is moderately broad, and there is a small blunt tubercle at the base of the second segment. Sixth ventral segment with a small spine on each side at the apical angles. Hypopygium with a rounded lobe on each side at the base, thence rather broadly produced to the base of the apical spine, obliquely striated above, punctured beneath.

Black; mandibles, clypeus, the inner margin of the eyes as high as the base of the antennae, the outer margin narrowly to the summit, the anterior margin of the pronotum interrupted in the middle, and a spot usually rather small on each side of dorsal abdominal segments 1-5, yellow. Wings very pale fusco-hyaline, nervures black.

Length 24-27 mm.

Var. *a*. A yellow spot on each side of the sixth dorsal segment.

Var. *b*. Femora ferruginous, abdominal spots enlarged.

♀. Clypeus without a carina. Head moderately convex, shining, sparsely and irregularly punctured, nearly twice as broad

as long, slightly narrowed anteriorly, rounded at the posterior angles. Thorax sparsely punctured; the pronotum much broader than long, slightly narrowed posteriorly, broadly emarginate anteriorly, with a row of setigerous punctures along the margin. Median segment as long as the scutellum, broadened from the base and obliquely truncate posteriorly, the surface of the truncation almost smooth. First dorsal abdominal segment obliquely striated, the striae arched in the middle; second segment with many transverse striae, higher at the apex than at the base; segments 3-5 with a few scattered punctures near the apex; fifth ventral segment obliquely striated. Pygidium narrowed at the base, then deflexed, broadened and transversely striated, truncate posteriorly, the surface of the truncation smooth and broad; the dorsal plate shorter than the ventral, broadly and shallowly emarginate at the apex, the angles of the emargination produced into blunt lobes. Intermediate tibiae broad and thick, the basal joint of the intermediate tarsi broad.

Length 14-18 mm.

Var. *b*, in copula with ♂ var. *b*. The surface of the posterior truncation of the pygidium obliquely striated.

Hab. South Perth, W. A. (*H. M. Giles*). ♂ ♀ in cop. January. Also in the Berlin Museum from Western Australia (*Preiss*).

"Common, some seasons scarcer" (*Giles*).

This belongs to the *Zaspilothynnus* group.

ZASPILOTHYNNUS MATURUS, sp. n.

♀. Clypeus without a carina, sparsely punctured, very broadly and shallowly emarginate at the apex. Head slightly convex, shining, sparsely punctured, with a short, longitudinal, frontal sulcus, half as broad again as long and rounded at the posterior angles. Pronotum rather more closely and finely punctured than the head, with a row of large setigerous punctures along the anterior margin, as broad as the head, more than half as broad again as long, slightly narrowed posteriorly. Scutellum and median segment shining, very sparsely punctured; the median segment shorter than the scutellum, broadened from the base and almost vertically truncate posteriorly. First abdominal segment truncate anteriorly, very sparsely punctured, with a few fine transverse striae before the apex, the apical margin raised, with a broad groove before it; second segment with twelve or more transverse carinae, those at the base low and irregular, those at the apex higher; segments 3-5 shining, sparsely punctured near the apex; fifth ventral segment longitudinally and coarsely striated. Pygidium narrow at the base, vertically truncated posteriorly, sharply contracted before the base of the truncation, the surface of the truncation large, broadly ovate, with a number of low arched carinae at the base not reaching the middle, the apex smooth. A tuft of long pale hairs on each side at the base of the pygidium. Intermediate tibiae very thick and spinose, the basal joint of the intermediate tarsi broadened.

Black; a spot on each side at the posterior angles of the pronotum, a transverse band on the first dorsal abdominal segment above the truncation, a spot on each side of the second segment, a transverse band interrupted in the middle on the third segment and a transverse spot on each side of the fourth, pale yellow. Anterior tibiae fusco-ferruginous beneath.

Length 17 mm.

Hab. South Perth, W. A. (*H. M. Giles*).

ZASPILOTHYNNUS CLELANDI, sp. n. (Plate XXXI. figs. 14 ♂, 15 ♀.)

♂. Clypeus large, very broadly truncate at the apex, almost pointed at the base, punctured at the extreme base, elsewhere finely longitudinally striated, with sparse punctures between the striae. Antennae as long as the thorax without the median segment, of almost even thickness throughout. Head closely punctured; the interantennal prominence broadly rounded at the apex and connected with the base of the clypeus by a very short narrow carina. Thorax and median segment finely and closely punctured, more sparsely on the scutellum and on the disc of the mesonotum; scutellum large and broadly rounded at the apex. Median segment more than half as long as the scutellum on the dorsal surface, then obliquely sloped and subconcave to the apex. Abdomen sparsely punctured, shining, longer than the head, thorax and median segment combined, tapering slightly at the extremities; the apical dorsal segment produced from the base into a small, flat, longitudinally striated plate which is very feebly emarginate at the apex. Sixth ventral segment with a spine on each side at the apical angles. Hypopygium with a blunt spine on each side at the basal angles, thence narrowly produced and elongate to the base of apical spine, transversely striated above, with a median longitudinal carina.

Black; the clypeus, the margins of the eyes interrupted at the summit, the band on the outer margin continued along the posterior margin of the head, the interantennal prominence narrowly continued to the anterior ocellus, the mandibles (except at the apex), the margins of the pronotum, a large spot on the disc of the mesonotum, the tegulae and a longitudinal line above them, the whole front of the mesopleurae, a large spot before the intermediate coxae, the middle of the scutellum very broadly and a spot at each of its anterior angles, the postscutellum, the median segment with a longitudinal black band on each side, a broad transverse band on each of the six basal abdominal segments interrupted in the middle on the dorsal surface, the prosternum, the apex of the mesosternum, the coxae, the femora beneath and the tibiae above, yellow. Wings hyaline, nervures black. The labrum is pale testaceous, shallowly emarginate at the apex.

Length 13–20 mm.

♀. Mandibles long, falcate, acute at the apex; the clypeus without a carina. Head smooth and shining, with a few scattered

punctures, the front between the antennæ more closely punctured, eyes not touching the base of the mandibles; the head broader than long, strongly rounded at the posterior angles, scarcely convex and rather thin. Pronotum nearly twice as broad as long, the anterior margin almost straight with a row of setigerous punctures, the posterior margin broadly emarginate, finely punctured rugulose. Scutellum and median segment very sparsely punctured; the median segment nearly as long as the scutellum, broadened from the base and almost vertically truncate posteriorly. The intermediate tibiæ and the basal joint of the tarsi are scarcely more thickened than those of the posterior legs. Abdomen very sparsely punctured; the basal segment truncate anteriorly, sparsely clothed with long grey hairs, the apical margin raised, with a transverse groove before it; second segment with seven transverse carinæ lower at the base than at the apex, including the raised apical margin; fifth ventral segment longitudinally striated; pygidium very narrow at the base, almost vertically truncate posteriorly, the surface of the truncation smooth, elongate-ovate, the dorsal plate much shorter than the ventral and produced in the middle at the apex. Pale castaneous brown; the mandibles, the sides of the head, the pleuræ, the fifth abdominal segment, the middle of the second dorsal segment, the base and apex of the third, the extreme apex of the fourth, the middle of the second and third ventral segments, and the femora, black; pygidium and antennæ fusco-ferruginous.

Length 11–12 mm.

Hab. Strelley River, N.W. Australia (*H. M. Giles*). ♂ ♀ in cop. 12 ♂, 7 ♀. October.

"All on two small plants of *Grevillea*" (*Giles*).

A rather distinct species, approaching the *leachiellus* group, but the female shows some points of resemblance to typical *Thynnus*, though differing in the absence of concave areas on the head.

Fam. SCOLIIDÆ.

ANTHOBOSCA STRANDI, sp. n.

♀. Clypeus strongly but rather sparsely punctured, triangularly flattened from near the base to the apex. Front closely and coarsely, vertex more finely punctured; head and pronotum thinly covered with long pale fulvous pubescence. Pronotum and median segment very finely and closely punctured; mesonotum more strongly punctured; scutellum strongly but sparsely punctured, very broadly rounded at the apex. Abdomen shining, very finely punctured, with sparse, long, grey pubescence on the sides; the apical dorsal segment thickly clothed with stiff fusco-ferruginous hairs, rounded at the apex. Pleuræ very finely and closely punctured, the sides of the median segment smooth and shining at the base. Radial cell broadly rounded at the apex, the second abscissa of the radius twice as long as the first and distinctly longer than the third; first recurrent nervure received

at one quarter from the base of the second cubital cell; second recurrent received at one-fifth from the base of the third cubital cell.

Black; the apex of the scape and the flagellum beneath fusco-ferruginous; the basal half of the mandibles, tegulae, tibiae, tarsi, the apex of the femora and the whole of the posterior femora ferruginous. Wings hyaline, faintly tinged with yellowish brown, nervures fuscous, stigma ferruginous. A dull ferruginous spot on the outer margin of the eyes, close to the summit.

The posterior femora are produced below near the apex into a broadly rounded flattened projection, rather more strongly developed than in most species of the genus.

Length 13 mm.

Hab. The locality on the label is Endeavour River, Queensland, but as other species received from the same source and bearing the same locality are undoubtedly Victorian, I consider that this also is almost certainly from Victoria.

Most nearly allied to *A. cognata* Sm. from the Swan River, but differs in neurulation and in the sparser sculpture of the abdomen.

Type in Berlin Museum.

ANTHOBOSCA NUBILIPENNIS, sp. n.

♀. Clypeus coarsely but sparsely punctured, broadly rounded at the apex. Scape smooth above, very sparsely punctured beneath and with a few short hairs. Head sparsely but deeply punctured, the front rugose in the middle, the vertex behind the ocelli almost smooth. Eyes very broadly and feebly emarginate on the inner margin. Pronotum and scutellum coarsely but not closely punctured, the pronotum almost as wide as the head; mesonotum as long as the pronotum, smooth, with a few scattered punctures on the sides and near the posterior margin; propleurae punctured above and in front, obliquely striated below and behind; mesopleurae coarsely but not very closely punctured; the sides of the median segment obliquely striated. Scutellum very broadly rounded at the apex. Median segment finely rugose, subtuberculate in the middle at the base, shorter than the scutellum, abruptly and almost vertically truncate posteriorly, the surface of the truncation shining and almost smooth. Abdomen rather sparsely punctured, more closely and finely at the base of the third and fourth segments, the basal segment almost smooth. Sixth dorsal segment coarsely longitudinally striated from the base to beyond the middle, the apex rounded and very delicately rugulose; the ventral plate subtriangular, very narrowly rounded at the apex. Wings rather short, the second abscissa of the radius half as long again as the first, the third nearly half as long again as the second. Radial cell very narrowly rounded at the apex, almost pointed, separated from the costa at the apex; stigma small and narrow. First recurrent nervure received by the second cubital cell at two-thirds from the base, second received by the third cubital cell just before one quarter from the base.

Black, with very sparse grey pubescence; the tarsal ungues fusco-ferruginous. Wings fusco-hyaline, nervures fuscous.

Length 16 mm.; length of costa 8 mm.

Hab. Claremont, W. A. (*H. M. Giles*). December.

Well distinguished by the truncated median segment and the coarse longitudinal carinae on the pygidium.

ANTHOBOSCA GILESI, sp. n. (Plate XXXII. fig. 4, ♂.)

♂. Clypeus convex, closely punctured, rounded at the sides, truncate at the apex. Antennae shorter than the thorax and median segment combined, very stout, inserted nearer to each other than to the eyes; the second joint of the flagellum nearly as broad as long, much shorter than the third joint. Head, thorax, and median segment very finely and closely punctured; the posterior ocelli as far from each other as from the eyes; the pronotum rounded anteriorly; the scutellum broadly truncate at the apex, with an obscure median carina on the apical half. Median segment very little longer than the scutellum, almost rectangular, nearly twice as broad as long. Abdomen tapering to the apex, the apical segment very narrowly rounded, the basal segments finely shagreened, the two apical segments very finely and closely punctured. Second abscissa of the radius twice as long as the first and half as long as the third, the first recurrent nervure received just beyond the middle of the second cubital cell, the second just beyond one quarter from the base of the third cubital cell.

Black; the base and sides of the clypeus, a broad band on the posterior margin of the pronotum, and the tegulae yellow; femora, tibiae, and tarsi ferruginous. Wings hyaline, nervures black, yellow at the base.

Length 11–14 mm.

Hab. South Perth, W. A. (*H. M. Giles*). January. 3 ♂.

The first abdominal segment is longer than the second and is narrowed towards the base. The tarsal ungues are thickened and bluntly produced at the base, not bidentate at the apex. The abdomen is much broader at the base than in *A. australasia* Guér., and the tarsal ungues are less distinctly toothed. The yellow marks on the clypeus vary much both in size and position, in one specimen the base is black and the apex yellow.

Fam. CEROPALIDÆ.

In working on this family I have attempted to use the classifications of Kohl and Ashmead. The former is, however, hardly to be taken as more than a sketch, and is not worked out with much detail, though useful as far as it goes. Ashmead on the contrary makes many new genera, some of which will doubtless stand, but the characteristics given are often insufficient; and too much importance is attached to minute points of neurulation, which an examination of a large collection shows to be often more

or less variable in geographical races. But the habit of this author of taking undescribed species as the types of his genera is most objectionable, and no editor should have published work in which such a fault is evident. The form of his tables is also occasionally incorrect or unfinished, making them very difficult to follow.

AGENIA BARBATULA, sp. n.

♀. Clypeus transverse at the apex, twice as broad as long; a tuft of very long pale creamy hairs at the base of the maxillæ. Eyes scarcely touching the base of the mandibles, a little nearer together on the vertex than on the clypeus; posterior ocelli a little further from each other than from the eyes. Antennæ a little longer than the thorax and median segment combined, the second joint of the flagellum half as long again as the third and at least three times as long as the first. Pronotum nearly as long as the mesonotum, narrowed and rounded anteriorly, the posterior margin very feebly arched. Median segment much longer than broad, with an obscure median sulcus, roundly depressed near the apex. Shining, microscopically punctured; the median segment opaque, finely shagreened. Abdomen ovate, with a short petiole. Tarsal ungues with a tooth beyond the middle. Radial cell broad, second abscissa of the radius nearly twice as long as the third, first recurrent nervure received at the middle of the second cubital cell, second before one quarter from the base of the third cubital cell. Median cell scarcely shorter than the submedian; cubitus of the hind wing originating well beyond the transverse median nervure.

Black; legs and antennæ dark fusco-ferruginous, mesonotum and abdomen with a bluish gloss. Wings hyaline, a fuscous band crossing the wing at the basal nervure, a broader one from the stigma not reaching beyond the discoidal cell.

Length 6 mm.

Hab. Mackay, Q. (*Turner*). November.

This is the first species of the genus recorded from Australia, for *Pogonius lunulatus* Sauss. seems to belong to *Pseudagenia*.

AGENIA GILESI, sp. n.

♀. Clypeus transverse at the apex, fully twice as broad as long, the labrum exposed and broad. Eyes not nearly reaching the base of the mandibles, the inner margins nearly parallel; ocelli in a broad triangle, the posterior pair as far from each other as from the eyes. Antennæ scarcely longer than the thorax and median segment combined; the second joint of the flagellum equal in length to the third. Pronotum not depressed or narrowed anteriorly, as broad as the head and as long as the mesonotum. Median segment broader than long, steeply sloped posteriorly. Abdomen subpetiolate, ovate, the apical segment broadly rounded at the apex. Microscopically punctured; head, thorax, and median segment opaque, abdomen shining. Legs not very long,

posterior tibiæ quite smooth, tarsal ungues with one tooth. Radial cell broad, second abscissa of the radius nearly as long as the third, first recurrent nervure received beyond the middle of the second cubital cell, second before one-third from the base of the third cubital cell. Submedian cell equal in length to the median; cubitus of the hind wing originating some distance beyond the transverse median nervure. Black; legs fusco-ferruginous. Wings hyaline, crossed by a fuscous band which extends from the basal nervure to the middle of the radial cell; a small fuscous cloud at the apex.

Length 8 mm.

Hab. South Perth, W. A. (*H. M. Giles*). January.

Differs from the characters of *Agenia* as given by Ashmead in the eyes not reaching the base of the mandibles. I have been unable to see any long hairs at the base of the maxillæ, but the general facies is that of *Agenia* rather than of *Pseudagenia*.

Key to the species of *Pseudagenia* mentioned here.

♀ ♀.

- | | |
|--|-----------------------------|
| A. Abdomen and thorax marked with yellow | <i>P. gilberti</i> . |
| B. Abdomen and thorax without yellow markings. | |
| <i>a</i> . Antennæ black, rarely marked with white. | |
| <i>a</i> ² . Fifth joint of the flagellum creamy white above... | <i>P. æneopilosa</i> . |
| <i>b</i> ² . Antennæ entirely black. | |
| <i>a</i> ³ . Clypeus narrowly produced into a stout tooth... | <i>P. camilla</i> . |
| <i>b</i> ³ . Clypeus broadly rounded or transverse at the apex. | |
| <i>a</i> ⁴ . Thorax and abdomen glossed with steel-blue. Length 4 mm. | <i>P. una</i> . |
| <i>b</i> ⁴ . Thorax and abdomen entirely black. Length 8-13 mm. | |
| <i>a</i> ⁵ . Median segment longer than broad | <i>P. valeria</i> . |
| <i>b</i> ⁵ . Median segment broader than long | <i>P. dispersa</i> . |
| <i>b</i> . Antennæ entirely or in great part orange-yellow. | |
| <i>a</i> ³ . Wings fuscous, without darker bands. | |
| <i>a</i> ³ . Three basal joints of antennæ only orange. Front with golden pubescence..... | <i>P. flavicornis</i> Sm. |
| <i>b</i> ³ . Eight basal joints of antennæ orange. Pubescence on front paler | <i>P. provida</i> . |
| <i>b</i> ² . Wings hyaline or fusco-hyaline, crossed by fuscous bands. | |
| <i>a</i> ³ . Wings fusco-hyaline. | |
| <i>a</i> ⁴ . Clypeus shallowly bisinuate, with a short median tooth | <i>P. consociata</i> . |
| <i>b</i> ⁴ . Clypeus transverse at the apex | <i>P. novaræ</i> Sauss. |
| <i>b</i> ³ . Wings clear hyaline. | |
| <i>a</i> ⁴ . Median segment rather coarsely transversely striated | <i>P. fasciata</i> Fabr. |
| <i>b</i> ⁴ . Median segment not transversely striated. | |
| <i>a</i> ⁵ . Median segment without a median sulcus. Length 7 mm..... | <i>P. cornelia</i> . |
| <i>b</i> ⁵ . Median segment with a shallow median sulcus. | |
| <i>a</i> ⁶ . Median segment longer than broad | <i>P. fusiformis</i> Sauss. |
| <i>b</i> ⁶ . Median segment as broad or broader than long..... | <i>P. australis</i> Cam. |

The species seem to vary geographically to a certain degree as to the relative size of the cubital cells.

PSEUDAGENIA UNA, sp. n.

♀. Clypeus transverse at the apex, more than three times as broad as long; eyes not quite touching the base of the mandibles, their inner margins nearly parallel; posterior ocelli nearly half as far again from the eyes as from each other. Antennæ rather slender, longer than the head, thorax and median segment combined; the second joint of the flagellum only a little longer than the third. Closely microscopically punctured and slightly shining. Head nearly twice as broad as the thorax. Pronotum broad, nearly as long as the mesonotum, slightly rounded at the anterior angles; median segment slender, convex, at least twice as long as broad. Abdomen small, subpetiolate, shorter than the thorax and median segment combined. Second cubital cell almost triangular, nearly pointed on the radial nervure, third abscissa of the radius less than half as long again as the first, the third cubital cell short, very little longer than the second on the cubitus. Radial cell rather short, rounded at the apex; recurrent nervures received close to the middle of the second and third cubital cells; cubitus of the hind wing originating far beyond the transverse median nervure. Legs smooth.

Black, glossed with dark steely blue. Wings hyaline, crossed by a fuscous band at the basal nervure and by a very broad pale fuscous band almost reaching the apex from the base of the radial cell. Mandibles fusco-ferruginous.

Length 4 mm.

Hab. Mackay, Q. (*Turner*). March.

The neururation of this species is most like *Agenia*, but I cannot see the tuft of long hairs at the base of the maxillæ characteristic of that genus, so place it provisionally in *Pseudagenia*.

PSEUDAGENIA GILBERTI, sp. n.

♀. Clypeus broadly rounded anteriorly, much broader than long, slightly convex. Eyes almost touching the base of the mandibles, a little nearer together on the vertex than on the clypeus; the posterior ocelli further from the eyes than from each other. Second joint of the flagellum nearly half as long again as the third. Pronotum rather short, broadly rounded anteriorly; median segment obliquely sloped, a little longer than broad. Abdomen petiolate, the petiole occupying about one-third of the length of the first segment. Legs long and slender, the tarsal ungues with one tooth. Third abscissa of the radius more than half as long again as the second, first recurrent nervure received beyond the middle of the second cubital cell, second before one third from the base of the third cubital cell; submedian cell longer than the median; cubitus of the hind wing originating just beyond the transverse median nervure, almost interstitial. Second ventral segment with a well-marked transverse groove near the base.

Black; the anterior half of the clypeus, the margins of the eyes very narrowly not reaching the summit, a spot on the propleuræ, pronotum stained with black on the middle and sides, tegulæ, a

transverse band on the scutellum, another broader on the post-scutellum, the apex of the median segment produced in the middle into a longitudinal band which almost reaches the base, apex of the first abdominal segment, four apical segments, coxæ beneath, and a spot before the intermediate coxæ, yellow; first abdominal segment (except the petiole) legs and nine apical joints of the flagellum pale ferruginous brown. Front, pleuræ, coxæ, and abdomen with short golden pile, only showing in some lights. Wings hyaline, faintly clouded with fuscous along the costa, nervures ferruginous brown.

Length 12 mm.

♂. Similar, but with the first abdominal segment more slender, and the front round the base of the antennæ yellow.

Hab. Mackay, Q. (*Turner*).

PSEUDAGENIA CAMILLA, sp. n.

♀. Clypeus about twice as broad as the greatest length, produced at the apex into a long blunt tooth; inner margins of the eyes almost parallel, posterior ocelli more than half as far again from the eyes as from each other; eyes touching the base of the mandibles. Second joint of the flagellum more than half as long again as the third. Pronotum a little depressed anteriorly, strongly rounded at the anterior angles, the posterior margin broadly arched. Median segment transversely striated, much longer than broad, not truncate or sharply sloped posteriorly. Abdomen with a short petiole. Hind tibiæ with a few minute spines, tarsal ungues with one tooth. Second abscissa of the radius half as long again as the third; first recurrent nervure received before the middle of the second cubital cell, second at one-third from the base of the third cubital cell; submedian cell a little longer than the median; cubitus of the hind wing originating beyond the transverse median nervure.

Black; the mandibles ferruginous at the apex; head and thorax opaque; abdomen shining, with bluish reflections, covered with short griseous pile. Wings hyaline; a fuscous band crossing the wing at the basal nervure, another, much broader, from the radial cell.

Length 9 mm.

Hab. Mackay, Q. (*Turner*).

PSEUDAGENIA ANEOPILOSA, sp. n.

♀. Clypeus transverse at the apex, about three times as broad as long; the labrum slightly exposed, emarginate at the apex. Eyes separated on the vertex by a distance about equal to the length of the second joint of the flagellum, a little further apart at the base of the clypeus, just touching the base of the mandibles; posterior ocelli rather nearer to each other than to the eyes. Second joint of the flagellum less than one-third longer than the third. Opaque, pruinose. Pronotum less than half as long as the mesonotum, broadly arched posteriorly. Median segment longer

than broad, finely transversely striated, with a shallow median sulcus not reaching the apex, not truncate or steeply sloped posteriorly. Abdomen with a very short petiole, the segments except the first covered with short, very pale, golden pile. Hind tibiæ feebly spined; tarsal ungues toothed. Second abscissa of the radius a little longer than the third, recurrent nervures received just before the middle of the second and third cubital cells; submedian cell longer than median; cubitus of hind wing originating just beyond the transverse median nervure.

Black; the fifth joint of the flagellum beneath, the apex of the fourth and base of the fifth creamy white. Wings hyaline, a fuscous band crossing the wing at the basal nervure, another, much broader, from the base of the radial cell.

Length 11 mm.

Hab. Mackay, Q. (*Turner*).

PSEUDAGENIA VALERIA, sp. n.

♀. Clypeus about twice as broad as long, broadly rounded at the apex. Eyes touching the base of the mandibles, the inner margins nearly parallel; posterior ocelli about half as far again from the eyes as from each other. Antennæ slender, the second joint of the flagellum about one-fifth longer than the third. Pronotum depressed anteriorly and strongly rounded at the angles, the posterior margin feebly arched. Median segment slender, longer than broad, gently sloped posteriorly, indistinctly transversely striated, with an obscure median sulcus at the base. Abdomen petiolate, fusiform, the petiole occupying one-third of the length of the basal segment. Legs slender, posterior tibiæ smooth. Second abscissa of the radius as long as the third, second cubital cell nearly as long on the cubitus as the third; first recurrent nervure received well before the middle of the second cubital cell, second at one-third from the base of the third cubital cell; submedian cell longer than the median; cubitus of hind wing originating a little beyond the transverse median nervure.

Opaque black; tegulæ fuscous. Wings hyaline, a broad fuscous band crossing the wing at the basal nervure, another very broad from the radial cell, leaving a small hyaline patch at the apex.

Length 8 mm.

Hab. Cairns, Q. (*Turner*). February.

Very near *numeria* Sm. from Mysol, but in this species the median segment is longer, and *numeria* has the third cubital cell much shorter than the second on the radial nervure especially, the recurrent nervures are also both received nearer the middle of the cells. From *camilla* this species may be easily distinguished by the form of the clypeus.

PSEUDAGENIA DISPERSA, sp. n.

♀. Anterior margin of the clypeus very slightly arched; head wider than the thorax; posterior ocelli about half as far again from the eyes as from each other; eyes separated on the vertex

by a distance about equal to the length of the first and second joints of the flagellum combined, and by almost the same distance on the clypeus; the second joint of the flagellum more than half as long again as the first. Pronotum not much narrowed anteriorly, its posterior margin arched. Median segment finely transversely striated, convexly declivous, broader than long, with a longitudinal median sulcus. Abdomen subpetiolate, the first segment shorter than the second, narrowed at the base, but without a distinct petiole. Pruinose and subopaque.

Black, with short silver pile on the clypeus, face, pleuræ, and coxæ. Wings hyaline, with a very narrow fuscous band along the basal nervure of the fore wing, another much broader half crossing the wing from the base of the radial cell, the apex of both wings slightly clouded with fuscous. Second abscissa of the radius nearly equal to the third, second transverse cubital nervure short, the radial cell very broad. Cubitus of the hind wing originating just before the transverse median nervure.

Length 13 mm.

Hab. Mackay, Q. (*Turner*).

Very near *callisto* Sm. from Aru, but differs in the absence of a distinct petiole to the first segment of the abdomen, in the sculpture of the median segment, the greater distance between the eyes on the vertex, the short second transverse cubital nervure, and the point of origin of the cubitus of the hind wing, which in *callisto* is just beyond the transverse median nervure. The Indian species identified as *callisto* by Colonel Bingham is intermediate in the form of the petiole, but differs both from *callisto* and *dispersa* in the form of the median segment which is slender and much longer than broad. *P. erigone* Bingham is really nearer to the present species than his *callisto*. The difference in the point of origin of the cubitus of the hind wing is interesting as showing the slight systematic importance that can be attached to a character largely used by both Kohl and Ashmead in their classifications of the family.

PSEUDAGENIA FASCIATA Fabr. (Plate XXXII. fig. 5, ♀.)

Sphex fasciata Fabr. Syst. Ent. p. 350 (1775), ♀.

Hab. Mackay to Cooktown, Q. (*Turner*).

This species is very near the last, but has the antennæ yellow, and differs in the neurulation and in the form of the clypeus. The submedian cell of the fore wing is very much longer than the median, the third abscissa of the radius half as long again as the second, the cubitus of the hind wing originates beyond the transverse median nervure.

PSEUDAGENIA AUSTRALIS Cam.

Pseudogenia australis Cam. Entomologist, 1906. ♂.

This species has the second abscissa of the radius scarcely more than half as long as the third. My specimens are from Victoria. I doubt if it is more than a geographical race of *fasciata* Fabr.

PSEUDAGENIA FUSIFORMIS Sauss.

Agenia fusiformis Sauss. Reise d. Novara, Zool. ii. Hym. i. p. 53 (1867), ♀.

Hab. Sydney, N.S.W.; Mackay, Q. (*Turner*).

The second abscissa of the radius is longer than in *australis* Cam., and the petiole is longer; it is also a smaller species.

PSEUDAGENIA NOVARÆ Sauss.

Agenia novaræ Sauss. Reise d. Novara, Zool. ii. Hym. i. p. 54 (1867), ♂.

Nearly allied to *P. fasciata* Fabr., but is a larger insect. The female has the antennæ shorter and stouter than in *fasciata*; the clypeus shorter, less convex and more broadly truncate at the apex; the abdomen less distinctly petiolate, the apical segment more pointed, and the wings clouded with fuscous.

Hab. Victoria and New South Wales.

PSEUDAGENIA CORNELIA, sp. n.

♀. Clypeus very short, broadly rounded anteriorly, very slightly convex. Head thin; eyes touching the base of the mandibles; ocelli situated very near the posterior margin of the head, the posterior pair near together, more than half as far again from the eyes as from each other. Antennæ longer than the head, thorax and median segment combined; the second joint of the flagellum half as long again as the first. Thorax narrower than the head; pronotum rounded anteriorly, much shorter than the mesonotum. Median segment flattened, finely granulate, opaque, as long as broad, narrowed to the apex. Abdomen shining, elongate-ovate, with a short petiole, the apical segment narrow and pointed. Second abscissa of the radius less than half as long as the first; first recurrent nervure received before the middle of the second cubital cell, second at one-third from the base of the third cubital cell; submedian cell very little longer than the median; cubitus of hind wing interstitial with the transverse median nervure.

Black; the antennæ orange-yellow, the scape black at the base, the apical joint fuscous. Wings hyaline, with a fuscous mark at the base of the radial cell extending through the second cubital cell into the discoidal cell.

Length 7 mm.

Hab. Mackay, Q. (*Turner*).

PSEUDAGENIA CONSOCIATA, sp. n.

♀. Clypeus less than twice as broad as long, feebly bisinuate on the rather narrow apical margin, with a very short tooth in the middle, slightly convex. Eyes slightly convergent towards the vertex, almost touching the base of the mandibles; posterior ocelli about half as far again from the eyes as from each other. Antennæ moderately long; second joint of the flagellum fully half

as long again as the third. Pronotum depressed, narrowed and rounded anteriorly, the posterior margin arched. Median segment convex, about as long as broad, coarsely transversely striated, with a broad, shallow, median sulcus. Abdomen with a short petiole; the petiole distinctly longer than in *fasciata* Fabr., occupying about one-third of the length of the first segment; apical segment with a flat, oval, pygidial area, shining and sparsely punctured. Third abscissa of the radius about one-third longer than the second, first recurrent nervure received before the middle of the second cubital cell, second at one-third from the base of the third cubital cell; cubitus of the hind wing originating just beyond the transverse median nervure. Posterior tibiae with very small spines; tarsal ungues with one tooth near the middle.

Black; pruinose; seven basal joints of the antennae and the eighth and ninth beneath orange. Wings fusco-hyaline, with the usual two darker transverse bands, one narrow on the basal nervure, the other broad and not quite crossing the wing from the radial cell.

♂. As in the female, but the antennae are very long and slender, as long as the thorax and abdomen combined, the clypeus less than twice as long as broad, median segment half as long again as broad, less convex and more finely striated; petiole long; the first abdominal segment only very slightly widened at the apex, much longer and narrower than in *fasciata* ♂. Base of the mandibles, sides of the clypeus, and inner orbits of the eyes as high as the base of the antennae, pale yellow.

Length ♀ 14 mm., ♂ 12 mm.

Hab. Mackay and Cairns, Q. (*Turner*).

Very near *fasciata* Fabr., but in that species the wings are hyaline with fuscous bands, the petiole shorter, the second joint of the flagellum shorter in proportion to the third, the clypeus rounded at the apex, and the three apical joints of the flagellum only black. The first recurrent nervure in *fasciata* is received beyond the middle of the second cubital cell, the second only just before the middle of the third.

PSEUDAGENIA PROVIDA, sp. n.

♀. Black; the clypeus and front as high as the base of the antennae with short silvery pubescence slightly tinted with yellow; seven basal joints of the antennae bright orange-yellow. Wings fuscous, hyaline tinted with fuscous from near the base of the third cubital cell.

Very near *P. flavicornis* Sm. Second joint of flagellum half as long again as third, in *flavicornis* the third joint is a little shorter; clypeus very broadly rounded at the apex; head broad. Pronotum more than half as long as the mesonotum, the posterior margin very feebly arched; median segment transversely striated, with a shallow median sulcus, about twice as broad as long. Abdomen subpetiolate. Third abscissa of the radius more than half as long again as the second, first recurrent nervure received beyond two-

thirds from the base of the second cubital cell, second at one-third from the base of the third cubital cell; submedian cell longer than median; cubitus of hind wing originating just beyond the transverse median nervure.

Length 20 mm.

Hab. Mackay, Q. (*Turner*); Melbourne (*French*).

In *flavicornis* ♀ the three or four basal joints of the antennæ only are yellow, the pubescence on the front is golden, the median segment is slightly longer in proportion to the breadth, the head and clypeus narrower, and the whole insect smaller and less stoutly built; the second recurrent nervure is received only just before the middle of the third cubital cell, and the wings are darker at the apex. It also occurs at Mackay, but does not seem to have as wide a range as the present species.

PSEUDAGENIA LUNULATA Sauss.

Pogonius lunulatus Sauss, Reise d. Novara, Zool. ii. Hym. i. p. 58 (1867).

?*Pompilus spectrum* Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 329 (1886).

I think Kohl's name is probably intended for this species. He states, however, that there is no transverse groove on the second ventral segment, whereas in *lunulatus* it is distinctly visible, though in some specimens almost hidden by the apex of the first segment. The hind tibiæ, though feebly spined, are much more distinctly so than is usual in *Pseudagenia*, so that it can only be placed in the genus with doubt.

CRYPTOCHEILUS AUREOSERICEUS Guer. st. AUSTRALASIE Sm.

Mygminia australasie Sm. Ann. & Mag. Nat. Hist. (4) xii. p. 259 (1873), ♀.

The Australian form has the apical segment orange-brown clothed with golden pubescence, but does not seem to differ otherwise from Indian specimens.

Hab. Mackay and Cairns, Q. (*Turner*).

CRYPTOCHEILUS ASPASIA Sm.

Mygminia aspasia Sm. Journ. Proc. Linn. Soc., Zool. iii. p. 157 (1858), ♀.

Salix aspasia Kohl, Verh. zool.-bot. Ges. Wien, xxxiv. p. 45 (1884).

Hab. Aru, New Guinea (*Wallace*); Mackay and Cairns, Q. (*Turner*).

Not previously recorded from Australia. Cameron's remarks on this species are correct (Nova Guinea, vol. i. p. 55).

CRYPTOCHEILUS COMMIXTUS, sp. n.

♀. Clypeus more than twice as broad as long, very sparsely punctured, slightly porrect, the apical margin transverse. Eyes

almost touching the base of the mandibles, converging towards the vertex, separated on the vertex by a distance slightly less than the length of the second joint of the flagellum; the posterior ocelli nearly twice as far from the eyes as from each other. Antennæ not very stout, slightly longer than the head, thorax and median segment combined. Pronotum short, very broadly rounded anteriorly, with a delicate median sulcus. Median segment coarsely transversely striated, with a tubercle on each side at the base, nearly twice as broad as long, obliquely sloped posteriorly. Abdomen shining, slightly pruinose; the apical segment rather coarsely punctured, with long sparse fuscous pubescence. Posterior tibiæ serrate, tarsal ungues with one tooth before the middle, not bifid. Cubitus of the hind wing originating just beyond the transverse median nervure; radial cell of the fore wing rounded at apex, second abscissa of the radius shorter than the third, the second cubital cell shorter than the third on the cubital nervure, receiving the first recurrent nervure distinctly before the apex, second recurrent nervure received at about one-third from the base of the third cubital cell.

Orange-ferruginous; head and thorax covered with short golden pile; abdomen black, the apical segment fusco-ferruginous. Wings flavo-hyaline, without a discoidal spot, a narrow fuscous band on the outer margin.

Length 28 mm.

♂. As in the female, but the fuscous marginal band of the wings is broader, the sides of the thorax marked with black, and the clypeus rather longer and not porrect. The second joint of the flagellum is shorter in proportion, being less than half as long again as the third.

Length 19 mm.

Hab. Mackay and Cairns, Q. (*Turner*).

Differs in neuration from *C. aureosericeus* Guér., to which it bears a strong superficial resemblance. The shape of the second cubital cell is very different, also the position of the cubitus of the hind wing.

CRYPTOCHEILUS DARWINII, sp. n. (Plate XXXII. fig. 6, ♀.)

♀. Clypeus very slightly convex, a little broader than long, truncate at the apex, sparsely punctured, the labrum slightly exposed. Eyes almost touching the base of the mandibles, slightly converging towards the vertex, the posterior ocelli a little further from the eyes than from each other. Antennæ slender and very long, about as long as the thorax and abdomen combined; the second joint of the flagellum more than half as long again as the third. Head, thorax, and abdomen without punctures; front produced into a rounded tubercle at the base of each antenna, the tubercles separated by a deep sulcus which nearly reaches the anterior ocellus. Pronotum narrowed and depressed anteriorly, about as long as the breadth on the anterior margin; mesonotum with a longitudinal median furrow and a furrow on each side.

Median segment more than half as long as the breadth at the base, slightly narrowed posteriorly, with a large tubercle on each side near the base, very steeply sloped posteriorly, with an indistinct median sulcus and a few obscure striæ near the apex. Apical segment of the abdomen subtriangular, very narrowly rounded at the apex, and clothed with fulvous pubescence. Posterior tibiæ spined and slightly serrate; spines of the anterior tarsi short. Tarsal unguis long and slender, with one small tooth before the middle of the inner margin, not bifid. Radial cell rounded at the apex; second abscissa of the radius shorter than the third; first recurrent nervure received at two-thirds from the base of the second cubital cell, second before the middle of the third cubital. Cubitus of hind wing interstitial with the transverse median nervure. Orange ferruginous; sternum, pleuræ, scutellum, postscutellum, median segment, first abdominal segment, coxæ, trochanters, and the base of the femora black. Wings flavo-hyaline stained with black at the base and narrowly margined with fuscous at the apex.

Length 29 mm.

♂. Clypeus longer than broad; posterior tibiæ with short spines, not serrate; vertex black. Otherwise as in the female.

Length 14–17 mm.

Hab. Port Darwin (*Turner*). November. 1 ♀, 2 ♂.

Nearest to *C. tuberculatus* Sm., but the antennæ and legs are much longer, and the mesonotum is not black as in that species.

CRYPTOCHEILUS FULVIDORSALIS, sp. n.

♀. Clypeus short, three times as broad at the base as long, very sparsely punctured, the apical margin very feebly and widely emarginate, almost transverse; the labrum slightly exposed. Eyes very slightly convergent towards the vertex; posterior ocelli rather far apart, almost as far from each other as from the eyes. Antennæ moderately long, not very slender; the second joint of the flagellum about half as long again as the third. Head and thorax smooth, subopaque, a short frontal sulcus not reaching the anterior ocellus. Pronotum rounded at the anterior angles, about half as long as the mesonotum, with a delicate, impressed, longitudinal line on the middle. Median segment twice as broad as long, steeply sloped posteriorly, transversely striated, more finely on the dorsal surface than on the posterior slope; a blunt, low tubercle on each side near the base. Abdomen a little longer than the head and thorax combined, slightly pruinose. Posterior tibiæ serrate; tarsal unguis with one tooth, not bifid; legs of moderate length. Radial cell bluntly rounded at the apex, second abscissa of the radius much shorter than the third, second cubital cell receiving the first recurrent nervure at about one-third from the apex, third receiving the second recurrent nervure just before the middle; submedian cell much longer than the median; cubitus of the hind wing originating just beyond the transverse median nervure.

Fulvous orange; scutellum, postscutellum, median segment, basal segment of the abdomen, second and third ventral segments, pleuræ, thorax beneath, coxæ, trochanters, and base of the femora, black. Wings flavo-hyaline, very faintly clouded at the apex.

Length 19 mm.

Hab. Mackay, Q. (*Turner*). December.

Resembles *C. darwini* in colour, but the legs and antennæ are much shorter. The mesonotum is also much smoother and the median segment is striated.

CRYPTOCHEILUS SATHANAS, sp. n.

♀. Clypeus convex, more than twice as broad as long, opaque and sparsely punctured, the apical margin depressed and very narrowly shining. Inner margins of the eyes almost parallel, slightly diverging towards the clypeus; posterior ocelli as far from each other as from the eyes, the eyes touching the base of the mandibles. Antennæ moderately stout, as long as the thorax and median segment combined; the second joint of the flagellum more than half as long again as the third. Head opaque, almost smooth, a short longitudinal sulcus between the antennæ. Pronotum more than half as long as the mesonotum, the anterior angles strongly rounded. Thorax opaque; the mesonotum with an impressed, longitudinal, median line which is continued on the base of the scutellum. Median segment nearly twice as broad at the base as long, vertically truncate posteriorly, rectangular, with a deep median sulcus, indistinctly transversely striated on the apical half. Abdomen opaque, pruinose, the apical segment deflexed, rounded at the apex. Anterior tarsi with very short spines on the basal joint, posterior tibiæ serrate; tarsal ungues with one tooth on the inner margin. Radial cell pointed at the apex; first recurrent nervure received at two-thirds from the base of the second cubital cell, second at the middle of the third cubital cell; second abscissa of the radius shorter than the third; cubitus of the hind wing originating before the transverse median nervure.

Entirely black: wings dark fuscous without coloured reflections. Length 25 mm.

Hab. Port Darwin (*Turner*). November.

CRYPTOCHEILUS ERYTHROTHORAX, sp. n.

♀. Clypeus short, much broader than long, slightly convex, the apical margin very feebly and widely emarginate, almost transverse. Eyes scarcely separated from the base of the mandibles, converging a little towards the vertex, where they are separated by a distance about equal to the length of the third joint of the flagellum; posterior ocelli considerably further from the eyes than from each other. Antennæ rather slender, as long as the head, thorax and median segment combined; the second joint of the flagellum a little longer than the third. Pronotum narrowed and rounded anteriorly, the posterior margin arched, more than half as long as the mesonotum. Median segment as long as broad,

steeply sloped posteriorly, with a median sulcus, the apex and the posterior slope transversely striated. Abdomen subpetiolate, fusiform, pruinose, with a transverse groove on the second ventral segment. Posterior tibiae with a ridge above, spinose, not serrate; tarsal ungues with a tooth, not bifid; anterior tarsi without a comb; the tarsi long. Second abscissa of the radius almost equal to the third; radial cell rather blunt at apex, not truncate or rounded, first recurrent nervure received just before the middle of the second cubital cell, second at the middle of the third cubital cell; submedian cell longer than the median; cubitus of the hind wing interstitial with the transverse median nervure.

Black; antennae, legs, pleurae, thorax, and median segment above ferruginous red; extreme apex of the clypeus and base of the mandibles fusco-ferruginous. Wings hyaline, crossed by two broad fuscous bands, one on the basal nervure, the other from the radial cell; nervures black.

Length 12 mm.

♂. As in the female, but the legs are black excepting the anterior tibiae and tarsi, and the median segment is not striated.

Hab. Mackay and Kuranda, Q. (*Turner*). December to May.

This belongs to a rather distinct group, being without serrations on the hind tibiae. It is found occasionally running on the stem of *Eucalyptus* in proximity to the Reduviid bug *Entomocoris decoratus* Stål, which it closely resembles when the wings are closed.

CALOPOMPILUS TENULUS, sp. n.

♀. Clypeus about three times as broad as long, slightly convex, the anterior margin almost transverse. Eyes reaching to the base of the mandibles, converging towards the vertex, where they are separated by a distance equal to the length of the second and two-thirds of the third joint of the flagellum; posterior ocelli a little further from the eyes than from each other. Pronotum short, the posterior margin strongly angled in the middle; median segment convex, as long as broad, not truncate posteriorly, with a shallow median sulcus not reaching the apex. Abdomen slender, fusiform, subpetiolate; the second ventral segment with a transverse groove. Posterior tibiae strongly spinose, with a ridge; anterior tarsi without a comb; tarsal ungues with one tooth. Second abscissa of the radius nearly half as long again as the third; first recurrent nervure received at the middle of the second cubital cell, second at one-third from the base of the third; submedian cell longer than the median; cubitus of the hind wing interstitial with the transverse median nervure. Opaque, the abdomen slightly shining.

Black; joints 2-6 of the flagellum orange-yellow; anterior tibiae pale testaceous brown. Wings hyaline, crossed by two pale fuscous bands, one on the basal nervure, the other from the radial cell, the apex also pale fuscous.

Length 9-10 mm.

Hab. Mackay, Q. (*Turner*).

This species has the form of a *Pseudagenia*, from which it is removed by the spinose posterior tibiæ. The shape of the median segment is very different to typical *Calopompilus*.

CALOPOMPILUS RAPTOR Sm.

Pompilus raptor Sm. Trans. Ent. Soc. London, (3) i. p. 54 (1862), ♀.

Priocnemis polydorus Sm. Trans. Ent. Soc. London, 1868, p. 246, ♀.

Pompilus pollens Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 332 (1886), ♀.

As noticed by Kohl this species is somewhat intermediate between *Anoplius* and *Cryptocheilus*, having a transverse groove on the second ventral segment.

CALOPOMPILUS PICTIPENNIS Sm.

Pompilus pictipennis Sm. Cat. Hym. B. M. iii. p. 165 (1855), ♀.

Pompilus pachycerus Kohl, Verh. zool.-bot. Ges. Wien, xxxvi. p. 333 (1886), ♀.

Hab. Victoria.

CALOPOMPILUS MOLESTUS Sm.

Pompilus molestus Sm. Trans. Ent. Soc. London, (3) i. p. 54 (1862).

Hab. Melbourne to Brisbane.

Specimens from Stradbroke Island, Q., differ in having all the tibiæ ferruginous and the third abscissa of the radius longer than the second.

CALOPOMPILUS DEFENSOR Sm.

Priocnemis defensor Sm. Trans. Ent. Soc. London, 1868, p. 245, ♀.

Pompilus fulvipennis Sm. Descr. n. sp. Hym. p. 151 (1879), ♂ ♀.

I cannot see that *fulvipennis* is anything but a small specimen of *defensor*.

Calopompilus Ashm. is in my opinion a good genus, unless indeed it has to sink under *Hemipogonius* Sauss. The present species is not a typical example of the genus, as the cubitus of the hind wing originates a little before the transverse median nervure and the submedian cell of the fore wing is very little longer than the median. The male has no transverse groove on the second ventral segment, but this character seems to be common to the males of this genus. The differences noticed in neurulation do not seem to be constant, for in some specimens, including the type, the cubitus of the hind wing is very nearly interstitial with the transverse median nervure.

CALOPOMPILUS VELOX Sm.

Pompilus velox Sm. Trans. Ent. Soc. London, 1868, p. 240, ♂.

Pompilus akasuerus Kohl, Verh. zool.-bot. Ges. Wien, xxxvi p. 333 (1886), ♂.

I think this is a *Calopompilus*, though it is not quite certain, the female being still unknown.

CALOPOMPILUS ANTENNALIS Sm.

Pompilus antennalis Sm. Cat. Hym. B. M. iii. p. 161 (1855), ♂.

♀. Clypeus about three times as broad as long, the anterior margin not quite transverse, very feebly and widely emarginate, the labrum slightly exposed. Eyes very slightly convergent towards the clypeus, separated on the vertex by a distance about equal to the length of the first and two-thirds of the second joint of the flagellum; the posterior ocelli a little further from the eyes than from each other. Front very feebly raised at the base of the antennæ, marked with a short and shallow sulcus; third joint of the flagellum a little shorter than the second. Pronotum strongly rounded anteriorly, the posterior margin rather feebly arched, shorter than the mesonotum. Median segment fully twice as broad as long, with a median sulcus, abruptly truncate posteriorly. Abdomen subsessile; the second ventral segment with a transverse groove. Posterior tibiæ spinose, with a ridge, not serrate; anterior tarsi without a comb, tarsal ungues with one tooth. Second abscissa of the radius very little longer than the third; first recurrent nervure received at two-thirds from the base of the second cubital cell, second at the middle of the third cubital cell; submedian cell longer than the median; cubitus of hind wing interstitial with the transverse median nervure. Opaque, pruinose.

Black; flagellum orange-yellow; mandibles, labrum, anterior tarsi and apical joints of all the tarsi fusco-ferruginous; spurs of the tibiæ whitish; a band of white pile on the apical margin of the five basal abdominal segments. Wings fuscous, a subhyaline band beyond the third transverse cubital nervure.

Length 14 mm.

Hab. Mackay, Q. (*Turner*).

Specimens from Cumberland, N.S.W., have the second joint of the flagellum nearly half as long again as the third, the apical joint black, the second abscissa of the radius half as long again as the third.

CALOPOMPILUS NUGENTI, sp. n.

♀. Clypeus very short and broad, transverse at the apex, the labrum exposed. Head broader than long, the front not raised at the base of the antennæ, rather flat, smooth and shining. Eyes almost touching the base of the mandibles, their inner margins almost parallel, separated on the vertex by a distance

equal to the length of the three basal joints of the flagellum combined; the posterior ocelli a little further from the eyes than from each other. Antennæ rather stout, scarcely as long as the thorax and median segment combined; the second and third joints of the flagellum about equal in length, the fourth a little longer. Pronotum about one-third shorter than the mesonotum, slightly rounded anteriorly, more than twice as broad as long, the posterior margin very feebly arched. Median segment about half as broad again as long, with a shallow median sulcus, vertically truncate posteriorly, the face of the truncation coarsely transversely striated. Abdomen subsessile, fusiform. Tarsal ungues with one tooth; anterior tarsi without a comb; posterior tibiæ spinose, with a distinct ridge. Second abscissa of the radius nearly half as long again as the third; first recurrent nervure received at the middle of the second cubital cell, second at the middle of the third cubital cell; submedian cell longer than the median; cubitus of hind wing interstitial with the transverse median nervure. Opaque, pruinose.

Black; antennæ orange-yellow; apex of clypeus, labrum, mandibles, tegulæ and legs fusco-ferruginous. Wings subhyaline, crossed by a fuscous band on the basal nervure and by another, very broad, from the radial cell, the apex pale fuscous. Three basal dorsal segments of the abdomen with narrow bands of silver pile on the apical margin. Spines of the tibiæ whitish.

Length 13 mm.

Hab. Kuranda, Q. (*Turner*). December.

Specimens from Mackay have the legs black, except the anterior tibiæ and tarsi.

CALICURGUS (?) *BASIPENNIS*, sp. n.

♀. Clypeus short, broadly truncate at the apex. Eyes almost touching the base of the mandibles, their inner margins slightly curved, separated on the vertex by a distance equal to the combined length of the two basal joints of the flagellum; posterior ocelli a little nearer to the eyes than to each other. Antennæ longer than the thorax and median segment combined; the second joint of the flagellum half as long again as the third. Front very slightly raised at the base of the antennæ, with a short median sulcus. Pruinose and slightly shining. Head not very flat. Pronotum only a little shorter than the mesonotum, a little narrower than the head, rounded at the angles, the posterior margin scarcely arched. Median segment about half as broad again as long, obliquely deflexed near the apex. Abdomen subsessile, fusiform; the second ventral segment with a feeble transverse groove. Posterior tibiæ spinose, anterior tarsi without a comb; tarsal ungues bifid. Second abscissa of the radius more than half as long again as the third; the second cubital cell higher than long, much shorter than the third on the cubital nervure; first recurrent nervure received beyond two-thirds from the base of the second cubital cell, second at the middle of the

third cubital cell; submedian cell just longer than the median; cubitus of the hind wing originating well beyond the transverse median nervure.

Black, with a little very fine greyish pile; mandibles fusco-ferruginous, spines of the tibiæ whitish. Wings flavohyaline at the base, as far as the basal nervure on the fore wing, thence hyaline, crossed by two almost confluent pale fuscous bands; nervures fulvous at the base, fuscous from the basal nervure.

Length 9 mm.

Hab. Mackay, Q. (*Turner*).

The neurulation differs somewhat from typical *Calicurgus*.

CALICURGUS (?) *BASIPENNIS* st. *AGNATUS*, st. n.

♀. Very near *C. basipennis*, from which it differs only in the following points: the median segment is shorter and more steeply sloped, the tibiæ, tarsi, and second joint of the flagellum are ferruginous, and the colours of the wings darker. The third abscissa of the radius is longer, being nearly or quite as long as the second.

Hab. Kuranda, Q. (*Turner*). November to February.

This is almost certainly a mere geographical form of *basipennis*.

FERREOLOMORPHA ARTEMIS, sp. n.

♀. Clypeus extremely short and broad, transverse, the labrum exposed as long as the clypeus, broadly rounded at the apex. Head longer than broad, slightly convex, the front strongly raised and pointed at the base of the antennæ; eyes very narrowly separated from the base of the mandibles, the inner margins parallel; posterior ocelli scarcely further from the eyes than from each other. Antennæ a little longer than the thorax and median segment combined; the second joint of the flagellum about one-fourth shorter than the third joint. Pronotum a little longer than the mesonotum, nearly as broad as the head, the sides parallel, distinctly broader than long, the posterior margin very feebly arched, almost transverse. Median segment half as broad again as long, vertically truncate posteriorly, with a well-marked median sulcus on the dorsal surface. Abdomen subsessile, the sides almost parallel; second ventral segment with a transverse groove. Opaque, with very short and rather irregularly distributed brownish pile, thickest on the median segment. Tarsal ungues with one tooth; anterior tarsi without a comb; posterior tibiæ spinose but not serrate, not quite cylindrical. Second abscissa of the radius as long as the third, recurrent nervures received at the middle of the second and third cubital cells; submedian cell equal in length to the median; cubitus of the hind wing in the type originating just beyond the transverse median nervure, in another specimen interstitial with it. Wings rather short, when closed not reaching the apex of the abdomen.

Black; antennæ (except the three apical joints) orange-yellow, a very narrow band of silver pile on the apical margin of the three

basal abdominal segments. Wings fusco-hyaline, a flavo-hyaline lunule at the apex of the radial and third cubital cells, extending about half-way to the outer margin beyond the third transverse cubital nervure.

Length 8-11 mm.

Hab. Mackay, Q. (*Turner*).

I think I am correct in assigning this species to Ashmead's genus *Ferreolomorpha*, with which the neuration agrees well, but his description is somewhat brief.

ANOPLIUS AHRIMANES, sp. n.

♀. Clypeus short and very broad, transverse at the apex, slightly convex. Eyes separated from the base of the mandibles by a distance considerably less than the length of the first joint of the flagellum, their inner margins slightly sinuate and converging towards the vertex, where they are separated by a distance slightly exceeding the length of the third joint of the flagellum; posterior ocelli as far from each other as from the eyes. Antennæ as long as the head, thorax, and median segment combined; the second joint of the flagellum nearly half as long again as the third. Front not raised into tubercles at the base of the antennæ, the frontal sulcus very short. Head not flattened, moderately thick. Pronotum a little more than half as long as the mesonotum, rounded at the anterior angles, the arch of the posterior margin not angulate in the middle. Median segment subtuberculate on the sides before the stigma and with a blunt lateral tubercle before the posterior angles, nearly twice as broad as long, with a deep median sulcus and almost vertically truncate posteriorly. Thorax finely aciculate; median segment opaque. Abdomen subsessile, smooth and slightly shining, elongate fusiform; the apical segment long and narrow, finely punctured; second ventral segment without a transverse groove, but not quite even, showing a very obscure transverse depression. Tarsal ungues with one tooth; anterior tarsi with a long comb; posterior tibiæ spined, not serrate, almost cylindrical. Third cubital cell very short on the radial nervure, only one-fifth of the length of the second, but nearly as long as the second on the cubital nervure; first recurrent nervure received close to the apex of the second cubital cell, second beyond the middle of the third cubital cell; transverse median nervure interstitial with basal nervure; cubitus of hind wing interstitial with the transverse median nervure.

Black; the orbits of the eyes narrowly whitish grey, not reaching the summit. Wings black.

Length 24 mm.

Hab. Townsville, Q. (*Dodd*).

This species approaches the genus *Cryptocheilus*.

ANOPLIUS ATAVUS, sp. n. (Plate XXXII. fig. 7, ♀.)

♀. Clypeus transverse at the apex, short, more than twice as broad as long. Eyes separated from the base of the mandibles by

a distance about equal to the length of the first joint of the flagellum, their inner margins converging towards the vertex, where they are separated by a distance about equal to the length of the second joint of the flagellum; posterior ocelli a little further from the eyes than from each other. Front not raised at the base of the antennæ, which are not very stout, a little longer than the thorax and median segment combined; second joint of the flagellum long, nearly as long as the third and fourth combined. Pronotum broadly arched posteriorly, the apex of the arch forming a slight angle, the sides almost parallel, the anterior angles scarcely rounded. Median segment shorter than the scutellum, about twice as broad as long, with a deep median sulcus, steeply and obliquely sloped posteriorly. Abdomen almost smooth, the three basal segments slightly shining; second ventral segment without a transverse furrow. Second abscissa of the radius half as long again as the third; second cubital cell receiving the first recurrent nervure near the apex, third receiving the second recurrent nervure near the middle; transverse median nervure interstitial with the basal; cubitus of hind wing interstitial with the transverse median nervure. Tarsal ungues with one tooth; anterior tarsi with a comb.

Black; head, prothorax, and mesonotum closely covered with white pile, a narrow line across the vertex behind the ocelli without pile. Wings dark fuscous.

Length 22 mm.

Hab. Strelley River, N.W. Australia (*H. M. Giles*).

The white pile renders this species very conspicuous.

ANOPLIUS SENEX, sp. n. (Plate XXXII. fig. 8, ♀.)

♀. Clypeus slightly porrect, transverse at the apex, more than twice as broad as long. Eyes separated from the base of the mandibles by a distance not quite equal to the length of the first joint of the flagellum, their inner margins converging towards the vertex, where they are separated by a distance not quite equal to the length of the second joint of the flagellum. Antennæ a little longer than the thorax and median segment combined; the second joint of the flagellum more than half as long again as the third. Head moderately thick; a very faint frontal sulcus reaching the anterior ocellus. Pronotum scarcely more than half as long as the mesonotum, the anterior angles slightly rounded; the posterior margin arched, without an angle. Median segment more than half as broad again as long, with a deep median sulcus, almost vertically truncate posteriorly, sloped gradually to the base of the truncation. Abdomen subsessile, the second ventral segment without a transverse sulcus. Fore tarsi with a long comb; tarsal ungues with one tooth, not bifid. Second abscissa of the radius very little longer than the third; first recurrent nervure received close to the apex of the second cubital cell, second received at the middle of the third cubital cell; transverse median nervure almost interstitial with the basal nervure;

cubitus of the hind wing interstitial with the transverse median nervure.

Black, covered with whitish-grey pile; a transverse line on the vertex, the front of the mesonotum, the apical abdominal segment, and the extreme apex of the clypeus bare. Wings subhyaline, with a rather broad fuscous band on the outer margin.

Length 17 mm.

Hab. Victoria (*French*).

Allied to *A. atavus*, but differs in the shape of the cubital cells, the colour of the wings, and the much greater extent of the pile.

ANOPLIUS LABILIS Sm.

Pompilus labilis Sm. Descr. n. sp. Hym. p. 151 (1879).

Hab. Townsville, Q. (*Dodd*); Nicol Bay, W. A. (*Dr. Clement*).

ANOPLIUS DODDI, sp. n.

♀. Clypeus about twice as broad as long, rounded at the sides, almost transverse at the apex. Eyes almost touching the base of the mandibles, their inner margins converging towards the vertex, where they are separated by a distance equal to three-fourths of the length of the second joint of the flagellum; posterior ocelli a little nearer to the eyes than to each other. Front not produced into tubercles at the base of the antennæ; second joint of the flagellum long, more than half as long again as the third joint. Pronotum short, narrower than the head, the posterior margin strongly arched, with a slight angle at the apex of the arch. Median segment short, twice as broad as long, with a faint median sulcus, abruptly truncate posteriorly. Second ventral segment of the abdomen without a transverse groove. Tarsal unguis bifid; posterior tibiæ spined, cylindrical; anterior tarsi with a long comb. Third abscissa of the radius very short, no longer than the first; third cubital cell as long as the second on the cubitus, receiving the second recurrent nervure at two-thirds from the base; first recurrent nervure received at two-thirds from the base of the second cubital cell; transverse median nervure interstitial with the basal nervure; cubitus of the hind wing interstitial with the transverse median nervure.

Opaque black, with silvery grey pubescence on the clypeus, face, cheeks, continued along the posterior margin of the head, posterior margin of the pronotum, coxæ, pleuræ, posterior margin of the mesonotum, scutellum, anterior and posterior angles of the median segment, and base of the first abdominal segment; a band of grey pile narrowly interrupted in the middle at the base of abdominal segments 2-5. Wings hyaline, broadly fuscous along the basal nervure; another fuscous band beyond the radial cell, very broad but not quite touching the apex and continued on the hind wing; a fuscous patch occupying the radial and third cubital cells and extending into the second cubital and discoidal cells.

Length 9 mm.

Hab. Townsville, Q. (*Dodd*).

ANOPLIUS AMŒNULUS, sp. n.

♀. Clypeus about three times as broad as long, transverse at the apex. Eyes almost touching the base of the mandibles, their inner margins almost parallel, slightly curved towards the vertex, where they are separated by a distance equal to the length of the second joint of the flagellum; posterior ocelli about half as far again from the eyes as from each other. Antennæ as long as the head, thorax, and median segment combined; the second joint of the flagellum half as long again as the third and twice as long as the fourth. Pronotum depressed, shorter than the mesonotum, the posterior margin with a slight angle at the apex of the arch. Median segment a little broader than long, with a faint median sulcus at the base, obliquely sloped posteriorly. Abdomen fusiform; second ventral segment without a groove. Posterior tibiæ cylindrical, spinose; tarsal ungues with one tooth; anterior tarsi with a few short spines on the basal joint. Second abscissa of the radius nearly twice as long as the third; first recurrent nervure received near the apex of the second cubital cell, second close to the middle of the third cubital cell; submedian cell a little longer than the median; cubitus of hind wing interstitial with the transverse median nervure.

Black; with a transverse band of cinereous pile at the base of the second and third dorsal abdominal segments; silvery pile on the clypeus, sides of the postscutellum, coxæ, and angles of the median segment. Wings fuscous, an obscure band outside the third transverse cubital a little paler.

Length 13 mm.

Hab. Mackay, Q. (*Turner*). March.

This differs from *nubilipennis* Sm. in the structure of the posterior tibiæ as well as in other details. *A. cinereus* Fabr., a common Queensland species, has paler wings with a fuscous margin, and is a smaller species.

ANOPLIUS SERICOPS, sp. n.

♀. Clypeus about twice as broad as long, widely emarginate at the apex, the labrum exposed. Eyes separated from the base of the mandibles by a distance not exceeding half the length of the first joint of the flagellum, their inner margins nearly parallel, slightly curved towards the vertex, where they are separated by a distance about equal to the length of the third joint of the flagellum; the posterior ocelli about as far from each other as from the eyes. Front not raised into tubercles at the base of the antennæ; the second joint of the flagellum scarcely longer than the third. Pronotum as long as the mesonotum, narrower than the head, the arch of the posterior margin with an obtuse angle at the apex. Median segment distinctly broader than long, with a rather obscure median sulcus, truncate posteriorly. Abdomen elongate fusiform; second ventral segment without a transverse groove. Tarsal ungues bifid; posterior tibiæ spined; comb of anterior tarsi very short. Radial cell short, less than twice as long

as broad, first abscissa of the radius nearly twice as long as the second; third cubital cell petiolate, the petiole occupying about one-fourth of the length of the second transverse cubital nervure; transverse median nervure almost interstitial with the basal nervure; first recurrent nervure received at two-thirds from the base of the second cubital cell, second at the middle of the third cubital cell; cubitus of hind wing interstitial with the transverse median nervure.

Black, opaque, with cinereous pile on a broad band on the anterior margin of the pronotum and on the base of each abdominal segment from the second to the fifth inclusive; clypeus and face with silvery pile, the pile on the coxæ and thorax beneath grey. Wings fuscous, with a darker band at the apex.

Length 13-15 mm.

Hab. Mackay, Q. (*Turner*).

This is the only Australian species, so far as I know, in which the third cubital cell is petiolate.

ANOPLIUS NIGRICORNIS Fabr.

Spheg nigricornis Fabr. Syst. Ent. p. 351 (1775), ♀.

Pompilus diversus Sm. Trans. Ent. Soc. London, 1868, p. 244, ♀. (*Nec* Smith 1873, *nec* Dahlbom.)

Pompilus bos Dalla Torre, Cat. Hym. viii. p. 277 (1897).

The sculpture on the median segment is more distinct in recent specimens, which are also much larger, the Fabrician type being only 8 mm. in length, but I do not think they are specifically distinct.

ANOPLIUS ELATUS Sm.

Pompilus elatus Sm. Journ. Linn. Soc., Zool. viii. p. 82 (1864), ♀.

Hab. Morty (*Wallace*); Mackay, Q. (*Turner*).

I identify this species with some doubt, but my specimens answer well to the short description.

ANOPLIUS (EPISYRON) ORIENTALIS Cam.

Ceropales orientalis Cam. Mem. Manch. Lit. Phil. Soc. (4) iv. p. 432 (1891), ♂.

Pompilus orientalis Bingh. Fauna Brit. India, Hym. i. p. 157 (1897), ♂.

Hab. Mackay and Kuranda, Q. (*Turner*).

Though the male is not uncommon, I do not know the female.

ANOPLIUS (EPISYRON) JUBILANS, sp. n.

♂. Clypeus about twice as broad as long, slightly narrowed to the apex which is transverse; the labrum exposed, as long as the clypeus and narrowly truncate at the apex. Eyes separated from the base of the mandibles by a distance equal to about half the length of the scape, their inner margins slightly diverging

towards the vertex, where they are separated by a distance equal to the length of the second and third joints of the flagellum combined. Antennæ very stout, a little longer than the thorax and median segment combined, tapering to the apex, the joints arcuate beneath; scape very short, little more than half as long as the second joint of the flagellum, which is equal in length to the third. Pronotum short, depressed, rounded anteriorly, the posterior margin feebly arched. Median segment convex, as long as broad, longer than the mesonotum, very gradually sloped posteriorly. Abdomen subpetiolate, elongate fusiform; second ventral segment without a transverse sulcus. Tarsal ungues bifid; legs slender, a few minute spines on the posterior tibiæ. Second abscissa of the radius twice as long as the third, the second cubital cell a little longer than the third on the cubital nervure; first recurrent nervure received at two-thirds from the base of the second cubital cell, second at the middle of the third cubital cell; submedian cell slightly longer than the median; cubitus of the hind wing originating before the transverse median nervure. Opaque, pruinose.

Black; the antennæ (except the three apical joints) bright orange; labrum, sides and base of the clypeus, scape beneath, and the face as high as the base of the antennæ continued for a short distance on the inner margins of the eyes, creamy yellow; posterior margin of the pronotum, a transverse band on each side at the base of the second dorsal abdominal segment, another shorter and narrower on each side near the base of the third segment, the spines of the tibiæ, and a line near the base of the posterior tibiæ, white; anterior tarsi and tibiæ testaceous brown. Bands of greyish pile at the apex of the abdominal segments, very narrow on the first three, a little broader on the others. Thorax and median segment with patches of silvery pile. Wings hyaline, margined with pale fuscous, a pale fuscous band from the radial cell crossing the third cubital celi.

Length 11 mm.

Hab. Mackay, Q. (*Turner*). January.

I place this species in the subgenus *Episyrion* with some doubt, as it is very difficult to separate the males of that group from those of *Calopompilus*.

ANOPLIUS (EPISYRON) LEPIDOHIRTUS, sp. n.

♀. Clypeus very slightly convex, nearly three times as broad as long, the apical margin transverse. Eyes very narrowly separated from the base of the mandibles, slightly convergent towards the vertex, where they are separated by a distance about equal to the length of the second joint of the flagellum; posterior ocelli a little further from each other than from the eyes. Antennæ about as long as the head, thorax, and median segment combined; the second joint of the flagellum nearly twice as long as the third. A very delicate frontal sulcus, not reaching the

anterior ocellus. Pronotum depressed, short, narrowed anteriorly and strongly rounded at the angles, the posterior margin arched not angular at the apex. Median segment short, more than twice as broad as long, steeply sloped posteriorly, the median sulcus almost obsolete. Abdomen subsessile, elongate fusiform; second ventral segment without a groove. Tarsal unguis bifid; anterior tarsi with a comb. Third cubital cell very short, only one-third of the length of second on the radial nervure and only a little more than half as long as the second on the cubital nervure; first recurrent nervure received beyond the middle of the second cubital cell, second close to the middle of the third cubital cell; transverse median nervure interstitial with the basal nervure; cubitus of hind wing originating just before the transverse median nervure, almost interstitial.

Black, opaque; a very narrow line near the middle of the inner orbits of the eyes, the outer orbits very narrowly, the posterior margin of the pronotum, and a transverse band very narrow in the middle at the base of the third dorsal abdominal segment, dull ochreous; clypeus and face clothed with silvery pubescence, apex of the median segment and the whole of the first dorsal abdominal segment covered with close-lying, coarse, bluish-grey shining pubescence. Wings pale fusco-hyaline, the outer margin broadly fuscous.

Length 14 mm.

♂. Clypeus rather longer, the labrum slightly exposed, median segment longer and less sharply sloped; basal half of the flagellum ochreous beneath; band on the third abdominal segment white.

Length 9 mm.

Hab. Mackay, Q. (*Turner*). February to May.

This is probably only a geographical form of *papuensis* Sm., from which it differs in the much broader clypeus and face. In *papuensis* the anterior margin of the clypeus is yellow and there is a yellow line on the posterior margin of the mesonotum; the second recurrent nervure is also received nearer to the apex of the third cubital cell.

ANOPLIUS (EPISYRON) LIMPIDUS, sp. n.

♀. Clypeus transverse at the apex, more than twice as broad as long. Eyes very narrowly separated from the base of the mandibles, their inner margins slightly curved and converging towards the vertex, where they are separated by a distance equal to two-thirds of the length of the second joint of the flagellum; posterior ocelli a little further from the eyes than from each other. Antennæ as long as the head, thorax, and median segment combined; the second joint of the flagellum about half as long again as the third. Pronotum depressed anteriorly and rounded at the angles, the hind margin arched, with a slight angle in the middle. Median segment convex, obliquely sloped posteriorly, about twice as broad as long, the median sulcus almost obsolete. Abdomen subpetiolate, elongate ovate. Tarsal unguis bifid, anterior tarsi

with a comb. Third abscissa of the radius half as long again as the second; first recurrent nervure received near the apex of the second cubital cell, second beyond the middle of the third cubital cell; transverse median nervure interstitial with the basal nervure; cubitus of the hind wing originating just before the transverse median nervure.

Opaque, pruinose; a narrow frontal sulcus reaching the anterior ocellus; second ventral segment without a transverse groove.

Black; the posterior margin of the pronotum dull luteous; antennæ, femora, tibiæ, and tarsi ferruginous; the apex of the median segment with shining silvery pubescence, an obscure transverse band of dark grey pile at the base of the third abdominal segment and a spot of the same at the apical angles of the second. Wings hyaline, faintly tinged with yellow, crossed by two fuscous bands, one on the basal nervure, the other, very broad, from the radial cell.

Length 11 mm.

♂. Clypeus at the apex pale luteous; first dorsal segment of the abdomen covered almost to the apex with rather long silvery pubescence, a white transverse band much narrowed in the middle at the base of the third segment. Abdomen somewhat compressed laterally.

Length 8 mm.

Hab. Kuranda near Cairns, Q. (*Turner*). January and February.

ANOPLIUS (EPISYRON) KURANDENSIS, sp. n.

♀. Clypeus short, more than three times as broad as long, transverse at the apex. Eyes almost touching the base of the mandibles, the inner margins parallel near the base, curved towards the vertex, where they are separated by a distance about equal to the length of the two basal joints of the flagellum combined; posterior ocelli a little further from the eyes than from each other. Antennæ longer than the thorax and median segment combined; the second joint of the flagellum more than half as long again as the third. Pronotum short, depressed, rounded at the angles, the posterior margin broadly arched. Median segment deflexed, rounded posteriorly, about as long as broad. Abdomen small, narrowly fusiform. Tarsal unguis bifid; anterior tarsi almost without a comb, only one or two spines on the basal joint; posterior tibiæ spined. Second abscissa of the radius about three times as long as the third, first and third about equal in length; second cubital cell longer on the cubitus than the third; first recurrent nervure received at two-thirds from the base of the second cubital cell, second beyond the middle of the third cubital cell; transverse median nervure interstitial with the basal nervure; cubitus of hind wing originating just before the transverse median nervure.

Opaque black; the apex of the clypeus broadly, but deeply emarginate from the base in the middle, the inner orbits of the

eyes, posterior margin of the pronotum, a spot on the posterior margin of the mesonotum, a spot on the tegulae, and a broad transverse band at the base of the third dorsal segment of the abdomen, ochreous yellow; tibiae, tarsi, five basal joints of the antennae, and the base of the mandibles dull ferruginous brown. Wings subhyaline, slightly iridescent, broadly pale fuscous at the apex of the anterior pair; nervures testaceous brown. First dorsal segment clothed with greyish pubescence.

Length 6-8 mm.

Hab. Kuranda, Q. (*Turner*). January and February.

Two specimens.

APORUS CINGULATUS Fabr.

Sphex cingulata Fabr. Syst. Ent. p. 250 (1775).

Aporus cingulatus Sm. Cat. Hym. B. M. iii. p. 175 (1855).

Hab. Mackay to Cooktown, Q. (*Turner*).

The second abscissa of the radius is no longer than the first in the typical Queensland form, but in specimens from Victoria and South Australia it is much longer. As I cannot detect any other appreciable difference I consider it better to treat this as a geographical variation, though it is quite possible that it may prove to be distinct. Southern specimens are usually larger than the typical form. This is probably the species described by Kohl as *Pompilus apantelus*, but his description is very poor.

APORUS NIGROCINERASCENS, sp. n.

♀. Mandibles bidentate; clypeus broadly truncate at the apex, convex, nearly three times as broad as long, the labrum exposed. Eyes almost parallel on the inner margin, a little nearer together on the vertex than on the clypeus; the ocelli in a very broad triangle, the posterior pair rather further from each other than from the eyes. Head very thin; pronotum not very short, depressed and narrowed anteriorly. Median segment broader than long, obliquely sloped posteriorly, slightly shining, with an obscure median sulcus and a small triangular depression at the base, the posterior angles bluntly produced. Abdomen subsessile; the first segment longer and narrower than the second, broadened from the base; apical segment elongate, pointed, sparsely punctured. Second joint of the flagellum more than half as long again as the third. Anterior tarsi with a long comb; posterior tibiae spinose; tarsal ungues toothed but without a comb. Second abscissa of the cubitus twice as long as the first; radial cell broad, not more than twice as long as broad; first recurrent nervure received a little before the middle of the second cubital cell, the second near the apex; cubitus of hind wing interstitial with the transverse median nervure.

Black, with short obscure cinereous pubescence on the front, clypeus, margins of the pronotum very narrowly, posterior slope of median segment and apical margin of two basal abdominal

segments, the first broadly, the second narrowly; apical segment fuscous. Wings hyaline, broadly margined with pale fuscous at the apex.

Length 11 mm.

♂. Very similar, but the emargination of the eyes which is very feeble in the female is rather more distinct in the male. The first dorsal segment of the abdomen is entirely covered with cinereous pubescence.

Length 6 mm.

Hab. Mackay, Q. (*Turner*).

APORUS IMMITIS, sp. n.

♀. Clypeus transverse at the apex, about three times as broad as long. Eyes very widely and shallowly emarginate, a little nearer together on the vertex than on the clypeus; posterior ocelli as far from each other as from the eyes. Antennæ a little longer than the thorax and median segment combined; the third joint of the flagellum long, nearly as long as the second. Pronotum depressed anteriorly, about twice as broad as long, the posterior margin very feebly arched. Median segment with the sides parallel, rather broader than long, sloped posteriorly, but not truncate. Abdomen subsessile, rather slender, the apical segment pointed. Posterior tibiæ spinose, anterior tarsi with a rather feeble comb. Radial cell short and rather narrow, about three times as long as the greatest breadth; the second cubital cell arched towards the radial nervure, the second abscissa of the radius not more than half as long as the first; both recurrent nervures received by the second cubital cell, the first very near the base, the second close to the apex; cubitus of the hind wing originating just beyond the transverse median nervure, almost interstitial with it.

Black, with cinereous grey pubescence as follows: on the clypeus, front, margins of the pronotum, angles of the scutellum and median segment, mesopleuræ, and a broad transverse band on the apical margin of the four basal segments of the abdomen; mandibles fusco ferruginous at the apex. Wings hyaline at the base, fusco-hyaline towards the apex and along the nervures.

Length 8 mm.

Hab. Mackay, Q. (*Turner*).

Differs from *cingulatus* Fabr. in the slenderer antennæ, the different proportion of the joints of the flagellum, the shorter pronotum, the more gradual slope of the median segment, the shorter second abscissa of the radius, the narrower radial cell, and the much greater distance between the recurrent nervures.

APORUS ACER, sp. n.

♀. Clypeus about three times as broad as long, slightly convex; the anterior margin very feebly and widely emarginate, almost transverse. Eyes nearly parallel on the inner margin; the posterior ocelli almost as far from each other as from the eyes.

Second and third joints of the flagellum of about equal length. Pronotum depressed anteriorly, the posterior margin broadly arched. Median segment obliquely sloped posteriorly, the dorsal surface before the oblique slope about twice as broad as long. Anterior tarsi with a few short spines; posterior tibiæ spinose; tarsal ungues with one tooth. Second abscissa of the radius as long as the first, the two recurrent nervures received far apart near the base and apex of the second cubital cell, radial cell rather broad. Cubitus of hind wing originating far beyond the transverse median nervure. Transverse median nervure of fore wing joining the median nervure before the origin of the basal nervure.

Black, with cinereous pubescence on the clypeus, front, anterior angles and posterior slope of the median segment, and a broad transverse band on the apical margin of each of the four basal abdominal segments. Wings hyaline, with a narrow fuscous band crossing the wing at the basal nervure and another broad band from the radial cell; hind wing pale fuscous at the apex.

Length 9 mm.

Hab. Mackay, Q. (*Turner*). October.

Very near *A. immitis*, but differs considerably in neurulation and in the colour of the wings.

APORUS TENELLUS, sp. n.

♀. Mandibles bidentate; clypeus rather more than twice as broad as long, transverse on the anterior margin. Eyes nearly parallel, slightly converging towards the vertex; the ocelli in a broad triangle, the posterior pair further from each other than from the eyes. Head smooth and slightly shining. The antennæ scarcely as long as thorax and median segment combined; the second joint of the flagellum no longer than the third. Pronotum about twice as broad as long, not depressed anteriorly. Median segment a little longer than broad, the posterior slope steep but not abrupt, the posterior angles very feebly produced. Abdomen subsessile, slender, a little compressed laterally, the apical segment very narrowly rounded at the apex. Anterior tarsi without a comb, posterior tibiæ spinose. Second cubital cell pointed on the radial nervure, the distance between the recurrent nervures a little greater than their distance from the base and apex of the second cubital cell. Cubitus of the hind wing originating a little beyond the transverse cubital nervure. Transverse median nervure of fore wing received a little beyond the basal nervure.

Black, with greyish-white pubescence as follows: on the clypeus, front, margins of the pronotum narrowly, a transverse line on the mesonotum, two spots on the scutellum, the postscutellum, pleuræ, a large spot at each angle, anterior and posterior, of the median segment, a spot at the base of the first dorsal abdominal segment, and a broad transverse band, narrowly interrupted in the middle, on the apical margin of the four basal segments. Wings very pale fusco-hyaline, rather darker on the apical third of the fore wing.

♂ similar to ♀.

Length, ♀ 8 mm., ♂ 5 mm.

Hab. Mackay, Q. (*Turner*). January.

A very distinct species, differing from other Australian species in the absence of the tarsal comb, the long median segment, and the pointed second cubital cell.

PLANICEPS UMBRATICUS, sp. n.

♀. Clypeus produced over the mandibles, twice as broad as long, very broadly rounded, subtruncate at the apex. Eyes reaching to the base of the mandibles; posterior ocelli far apart, nearly twice as far from each other as from the eyes. Antennæ only a little longer than the thorax without the median segment; the third joint of the flagellum almost as long as the second; the insertion of the antennæ distinctly higher than the base of the eyes. Pronotum as long as the mesonotum, a little narrowed anteriorly. Median segment half as long again as broad, depressed in the middle at the apex, the apical angles acutely produced. Abdomen subsessile, elongate. Fore femora not swollen, posterior tibiæ spinose. Two cubital cells, the second receiving the two recurrent nervures near the base and near the apex; second abscissa of the radius two and a half times as long as the first; the submedian cell shorter than the median; cubitus of the hind wing originating well beyond the transverse median nervure. Very minutely punctured, the abdomen and head slightly shining.

Black; the antennæ fuscous. Wings very pale flavo-hyaline, nervures black.

Length, ♀ 7 mm., ♂ 5 mm.

Hab. Mackay, Q. (*Turner*).

The head is flattened as in the genus *Planiceps*, and the long pronotum removes the species from the group of *Aporus* most nearly allied to typical *Pompilus*. The anterior tarsi are without a comb.

PLANICEPS AUREOVESTITUS, sp. n. (Plate XXXII. fig. 9, ♀.)

♀. Clypeus short, about three times as broad as long, the apical margin transverse. Eyes not nearly reaching the base of the mandibles, slightly convergent towards the vertex; ocelli in a wide triangle, the posterior pair further from each other than from the eyes. Antennæ about as long as the thorax and median segment combined, inserted a little higher than the base of the eyes; the second and third joints of the flagellum about equal in length. Pronotum as long as the mesonotum and almost as broad as the head, feebly rounded at the anterior angles, the posterior margin widely arched. Median segment broader than long, obliquely truncate posteriorly, with a deep sulcus on the surface of the truncation. Abdomen subsessile; the first segment as long as the breadth at the apex, the second segment longer than the first and slightly broader. Fore femora only slightly thicker than the intermediate, basal joint of the fore tarsi longer than the three following joints combined. Two cubital cells, the second

receiving the two recurrent nervures at one-fifth from the base and one-fifth from the apex; second abscissa of the radius three times as long as the first, transverse median nervure interstitial with the basal nervure; cubitus of hind wing originating just beyond the transverse median nervure.

Black; smooth and slightly shining; a spot of dull and very short greyish pubescence at the base of the first dorsal abdominal segment and another at each of the apical angles: the third and fourth dorsal segments covered with coarse, close-lying, almost scale-like hairs of an ochreous colour. Wings hyaline, fuscous from the basal nervure to beyond the apex of the radial cell.

Length 9 mm.

Hab. Victoria (*C. French*).

This species does not quite correspond with the characters given by Ashmead for *Planiceps*, the fore femora being less swollen and the antennæ inserted a little higher. But, until the family is revised as a whole, I do not consider it advisable to found new genera.

PEDINASPIS EXULANS, sp. n.

♀. Clypeus broadly rounded at the apex, much broader than long, covering the mandibles. Eyes reaching the base of the mandibles, their inner margins curved, convergent both towards the clypeus and the vertex, separated on the vertex by a distance exceeding the length of the three basal joints of the flagellum; posterior ocelli twice as far from each other as from the eyes. Head much longer than broad, slightly convex, strongly concave beneath; the front slightly produced between the antennæ, which are inserted distinctly higher than the base of the eyes; the second and third joints of the flagellum of about equal length, each about twice as long as the first. Pronotum nearly as long as the mesonotum, depressed anteriorly, broader than long, the sides nearly parallel. Median segment about one-third longer than broad, the sides parallel, gently sloped towards the apex, the apical margin very widely emarginate, the angles produced into spines. Abdomen sessile, the two basal segments the broadest, the second longer than the first; second ventral segment without a transverse groove. Posterior tibiæ spined, anterior tarsi without a comb, tarsal ungues bifid. Second abscissa of the radius as long as the third, first recurrent nervure received before the middle of the second cubital cell, second near the apex of the third cubital cell; transverse median nervure interstitial with the basal nervure; cubitus of hind wing originating beyond the transverse median nervure. Minutely punctured, opaque.

Black, with close cinereous pubescence, which is thickest on the clypeus and pronotum and forms broad transverse bands on the apical margins of the abdominal segments. Wings subhyaline, nervures fuscous. Spines of the tibiæ whitish.

Length 9–10 mm.

Hab. Mackay, Q. (*Turner*). March.

PEDINASPIS NUDIVENTRIS, sp. n.

♀. Nearly related to *P. exulans*, but differs as follows:—the eyes are rather nearer together at the base than on the vertex, so that the clypeus is not so broad; the second joint of the flagellum is slightly shorter than the third and less than twice as long as the first; the third transverse cubital nervure is much less oblique; the whole insect is less opaque and almost without grey pubescence; the spines of the tarsi are pale testaceous; the wings flavo-hyaline on the basal half, subhyaline at the apex, nervures fulvous at the base, fuscous at the apex.

Length 9 mm.

Hab. Mackay, Q. (*Turner*). October.

The male has the eyes more nearly parallel, the joints of the flagellum arcuate beneath, pronotum and median segment shorter, and abdomen subconical. Antennæ fusco-ferruginous; fore tibiae and tarsi testaceous brown.

CEROPALES LIGEA Bingham.

Ceropales ligea Bingham. Fascic. Malay. Zool. i. App. 5 (1903), ♀.

♀. Clypeus more than twice as broad as long, broadly subtruncate at the apex; the labrum exposed and narrowly truncate at the apex. Eyes broadly and rather deeply emarginate; posterior ocelli twice as far from the eyes as from each other. Antennæ stout, slightly tapering at the apex; a very delicate longitudinal sulcus on the front not reaching the anterior ocellus. Pronotum short, the posterior margin feebly arched, the anterior angles rounded; mesonotum with two rather obscure longitudinal furrows; scutellum convex. Median segment oblique, rather broader than long, with a short furrow from the base not reaching the middle. Abdomen ovate, short, not compressed laterally. Median segment opaque, the remainder of the insect smooth and slightly shining. Legs long and slender, the posterior tibiae with minute spines.

Black; labrum, clypeus (except a median black line), inner margins of the eyes broadly as high as the emargination, outer margins of the eyes very narrowly, scape beneath, posterior margin of the pronotum, propleuræ anteriorly, tegulæ, post-scutellum, apical angles of the median segment, coxæ, a line on the anterior and intermediate femora beneath and on the anterior tibiae and tarsi, and a narrow, short, curved band on each side on the apical margin of the four basal abdominal segments yellowish white; anterior tibiae fusco-ferruginous; posterior femora ferruginous. Wings hyaline, with a faint and narrow fuscous marginal band at the apex, nervures black. Second abscissa of the radius longer than the third.

Length 6–7 mm.

♂. As in female, but the head is entirely black, the clypeus and labrum fuscous, the scape alone marked with white beneath; the apical dorsal segment of the abdomen is white.

Length 6 mm.

Hab. Shwegyin, Tenasserim (*Bingham*); Mackay, Queensland (*Turner*). 1 ♂, 4 ♀.

Australian specimens differ in having the third abscissa of the radius almost if not quite as long as the second, but not otherwise.

This species is noticed in the 'Zoological Record' for 1903 as *Cerceris ligea*.

CEROPALES TENUATUS, sp. n. (Plate XXXII. fig. 10, ♀.)

♀. Clypeus subtriangular, a little broader than long, broadly truncate at the apex, the labrum exposed and broadly rounded at the apex. Eyes converging towards the clypeus, broadly but very shallowly emarginate; posterior ocelli rather less than twice as far from the eyes as from each other. Antennæ stout, the apical joints feebly arcuate beneath; the front not raised into a prominence between the antennæ. Pronotum short, the anterior margin straight, not rounded at the angles, the posterior margin scarcely arched; mesonotum with two distinct longitudinal furrows. Median segment rounded at the sides, rather steeply sloped, broader than long, with an obscure median sulcus. Abdomen nearly as long as the head, thorax, and median segment combined, very strongly compressed laterally. Legs unarmed, not unusually long. Head opaque, sparsely punctured; thorax shining, almost smooth; median segment very finely transversely striated; abdomen smooth, slightly shining. Second abscissa of the radius less than half as long as the third.

Black; labrum, clypeus, front as high as the base of the antennæ, scape, margins of the eyes broadly interrupted on the summit, prothorax, sternum, a broad band on the mesonotum from before the middle to the posterior margin, a narrow band above the tegulæ, pleuræ, scutellum (except on the sides and extreme apex), postcutellum, median segment (except a large black spot on each side at the base), and the femora beneath yellow; first and second abdominal segments, the base of the third, and the legs (except the posterior tarsi) light testaceous brown. Wings hyaline, iridescent, nervures fuscous, stigma testaceous brown.

Length 12 mm.

Hab. Cairns, Q. (*Turner*). February.

Fam. SPHEGIDÆ.

Genus PARACRABRO Turn.

Paracrabro Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 274 (1907).

This genus is perhaps nearest to *Stigmus*, but also shows points of affinity to *Pemphredon*.

Type of genus, *P. froggatti* Turn. (Plate XXXII. fig. 11, ♀.)

Genus APHELOTOMA Westw.

APHELOTOMA AURIVENTRIS Turn.

Aphelotoma auriventris Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 269 (1907), ♀.

♂. As in the female, but the antennæ, mandibles, tibiæ, and tarsi are much darker than in the female, the antennæ and mandibles being almost black. The apical segments of the abdomen are also more withdrawn. The second recurrent nervure in this species is interstitial with the second transverse cubital nervure.

APHELOTOMA STRIATICOLLIS, sp. n.

♀. Clypeus small, shining; the labrum prominent and notched at the apex. Mandibles very sharply bent near the base, the apical half falcate and acute at the apex, the basal half much broadened, with a tooth near the middle of the inner margin. Antennæ inserted much further from each other than from the eyes, filiform; the second joint of the flagellum as long as the first joint and the scape combined. Head opaque, the front very finely and indistinctly longitudinally striated; the inner margin of the eyes nearly parallel; the posterior ocelli nearer to the eyes than to each other. Pronotum much narrower than the head, longer than the mesonotum, longer than broad, finely rugose, the sides raised and forming marginal carinæ, two parallel longitudinal carinæ close together near the middle reaching from the anterior to the posterior margin. Mesonotum and scutellum coarsely longitudinally rugose; propleuræ finely, mesopleuræ coarsely rugose. Median segment very coarsely reticulate, the sides obliquely striated, vertically truncate posteriorly, longer than the pronotum, broader than long. Abdomen smooth and shining, the third and following segments very minutely punctured. First recurrent nervure received beyond two-thirds from the base of the first cubital cell, second received near one-fifth from the base of the third cubital cell. The branch nervure from the first transverse cubital nervure reaching into the first cubital cell is very short.

Black; the mandibles and the apical joints of the tarsi beneath fusco-ferruginous; abdomen shining bronze. Wings fusco-hyaline, clearer at the apex, with a broad hyaline band crossing the first cubital cell; nervures fuscous, testaceous in the hyaline band.

Length 8 mm.

Hab. Townsville, Q. (*F. P. Dodd*). October.

Near *auriventris* Turn., but the position of the recurrent nervures is different; it also differs in the shape and sculpture of the pronotum and in colour.

APHELOTOMA AFFINIS, sp. n.

♀. Mandibles shaped very much as in *striaticollis*, but more broadly flattened on the basal half and with a small tubercle near

the base on the outer margin. Clypeus small, shining. Second joint of the flagellum about equal to the scape in length; the antennæ inserted further from each other than from the eyes. Head opaque, a delicate longitudinal carina below the anterior ocellus. Pronotum much narrower than the head, longer than broad, the sides parallel, finely rugulose, the lateral margins raised, with a longitudinal median sulcus. Mesonotum and scutellum coarsely longitudinally rugose, the mesonotum with an impressed, obscure, longitudinal line on each side. Median segment narrowed to the apex and vertically truncate posteriorly, reticulated, the margins slightly raised and with three rather obscure carinæ, the two lateral ones converging towards the apex. Abdomen smooth and shining. Second recurrent nervure received close to the base of the third cubital cell,

Black; mandibles and antennæ, except the three apical joints, ferruginous; tegulæ, tibiæ beneath, and tarsi fusco-ferruginous. Anterior wings pale fusco-hyaline, a broad hyaline band crossing the first cubital cell.

Length 6 mm.

Hab. Townsville, Q. (*F. P. Dodd*), November.

This may possibly be the female of *A. aterrima* Turn., but the sculpture of the thorax is very much coarser in the present species and the median segment more narrowed to the apex, so I think it is distinct,

AMMOPHILA (PARAPSAMMOPHILA) EREMOPHILA, sp. n. (Plate XXXII, fig. 12, ♂.)

♂. Clypeus sparsely and shallowly punctured, very thinly clothed with long cinereous pubescence, very slightly convex, with a very faint longitudinal carina not extending to the base or apex, a little broader than long, the apical margin broadly truncate. Eyes slightly convergent towards the clypeus, separated on the vertex by a distance one-quarter greater than on the clypeus; the posterior ocelli a little further from the eyes than from each other, connected with each other behind by a deeply impressed and feebly arched sulcus. Head irregularly and rather sparsely punctured; the front clothed with short silver-white pubescence, with a few long cinereous hairs; a shallow sulcus running from the anterior ocellus to the base of the antennæ. First joint of the flagellum very short, the second a little longer than the first and third combined. Pronotum closely punctured and clothed with long cinereous pubescence, short and almost vertically sloped anteriorly; mesonotum closely punctured, the punctures running into longitudinal striæ on the posterior half. Scutellum and postscutellum rather indistinctly longitudinally striated. Median segment strongly convex, reticulate on the middle, obliquely striated on the sides. Mesopleuræ coarsely punctured, separated from the metapleuræ by a deep, shining, oblique groove, and very sparsely pubescent. Abdomen shining and almost smooth; the ventral plate of the petiole seen from above almost as long as the two basal joints of the posterior

tarsus. Tarsal unguis bidentate at the base, the pulvillus large. Second cubital cell very short on the radial nervure, not more than one-third of the length of the third, which is longer on the radial than on the cubital nervure; the second cubital cell is nearly twice as long as the third on the cubital nervure and receives the first recurrent nervure just before the middle, the second just before the apex.

Entirely black; wings pale flavo-hyaline, clearer towards the apex, nervures testaceous.

Length 24-25 mm., expanse of wings 32 mm.

♀ unknown.

Hab. Hermannsburg, Central Australia (*H. J. Hillier*).

Described from two specimens in the British Museum.

SCELIPHON LÆTUM Sm. st. CYGNORUM st. n.

♀. Very near typical *lætum*, but differs in the following details: the depression in the middle of the pronotum is much deeper, the second cubital cell is longer on the radial nervure, and the yellow markings are absent from the scutellum, post-scutellum, apex of the median segment, and fourth abdominal segment; the base of the intermediate femora is marked with black and the yellow on the pronotum and fifth abdominal segment is more or less reduced.

Hab. South-Western Australia.

An intermediate form occurs in the north-west, in which the second cubital cell is of the same shape as in the typical form and the intermediate femora and postscutellum are coloured as in the type, the scutellum is also marked with yellow. The typical form occurs at Hermannsburg, Central Australia, and on the north and east coasts.

Key to the Australian Species of Spheg.

♀ ♀.

- | | |
|--|--|
| A. Second cubital cell higher than broad | Subgenus HARPACTOPUS. |
| a. Wings flavo-hyaline, the apical third pale fusco-hyaline | <i>S. sævus</i> Sm. |
| b. Wings hyaline, clouded at the apex | <i>S. globosus</i> Sm. |
| B. Second cubital cell as broad as high or broader. | |
| a. Third abscissa of the radius half as long as the second transverse cubital nervure or nearly; the median segment without a stigmal sulcus | Subgenus ISODONTIA. |
| a ² . Legs ferruginous | <i>S. abditus</i> Kohl, st. <i>nugenti</i> . |
| b ² . Legs black. | |
| a ³ . Petiole much shorter than the basal joint of the hind tarsi; wings pale flavo-hyaline | <i>S. claviger</i> Sm. |
| b ³ . Petiole nearly as long as the basal joint of the hind tarsi or longer; wings hyaline or fuscous. | |
| a ⁴ . Wings fuscous or fusco-hyaline, glossed with purple | <i>S. albohirtus</i> Turn. |
| b ⁴ . Wings hyaline, clouded at the apex. | |
| a ⁵ . Petiole longer than the basal joint of the hind tarsi | <i>S. nigellus</i> Sm. |
| b ⁵ . Petiole scarcely as long as the basal joint of the hind tarsi | <i>S. obscurellus</i> Sm. |

- b*. Third abscissa of the radius much less than half as long as the second transverse cubital nervure; median segment with a stigmal sulcus Subgenus SPHEX.
- a*². Scutellum divided by a longitudinal sulcus.
- a*³. Postscutellum bituberculate in the middle.
- a*⁴. Median segment coarsely transversely rugose-carinate *S. aurulentus* Fabr.
- b*⁴. Median segment not rugose-carinate.
- a*⁵. Legs and abdomen at the base and apex ferruginous orange *S. decoratus* Sm.
- b*⁵. Entirely black.
- a*⁶. Pubescence on thorax and median segment very sparse *S. umbrosus* Chr.
- b*⁶. Pubescence on thorax and median segment close, white on median segment, pale golden on mesonotum, scutellum bare *S. umbrosus* Chr., var. *carbo-*
[narius Sm.]
- b*³. Postscutellum not bituberculate.
- a*⁴. Median segment transversely rugose-carinate *S. rugifer* Kohl.
- b*⁴. Median segment not rugose-carinate.
- a*⁵. Legs and abdomen light ferruginous. *S. argentifrons* Sm.
- b*⁵. Legs and abdomen black.
- a*⁶. Mesonotum and median segment very thickly covered with pile.
- a*⁷. The long hairs on the clypeus black *S. ahasuerus* Kohl.
- b*⁷. The long hairs on the clypeus golden.
- a*⁸. Scutellum strongly convex, the longitudinal sulcus rather indistinct *S. cognatus* Sm.
- b*⁸. Scutellum not strongly convex, the sulcus distinct..... *S. vestitus*, Sm.
- b*⁶. Mesonotum and median segment rather sparsely pubescent.
- a*⁷. Postscutellum divided by a longitudinal sulcus; wings flavo-hyaline at the base *S. modestus* Sm.
- b*⁷. Postscutellum without a sulcus, wings subhyaline? *S. bilobatus* Kohl.
- b*². Scutellum without a sulcus.
- a*³. Abdomen black.
- a*⁴. Clypeus notched on the middle of the anterior margin.
- a*⁵. Wings hyaline, clouded at the apex, the nervures at the base broadly dark *S. luctuosus* Sm.
- b*⁵. Wings fuscous with a faint purple flush, paler at the apex..... *S. luctuosus* Sm., var. *fumi-*
[pennis Sm.]
- b*⁴. Clypeus without a notch *S. ermineus* Kohl.
- b*³. Abdomen steel-blue.
- a*⁴. Wings fuscous with a purple flush ... *S. gratiosissimus* D. T.
- b*⁴. Wings flavo-hyaline with a light fuscous border at the apex *S. gilberti* Turn.

S. gilberti has sometimes a very faint line on the scutellum, and in *S. modestus* Sm. the postscutellum is sometimes almost bituberculate.

SPHEX (HARPACTOPUS) GLOBOSUS Sm.

Sphex globosa Sm. Cat. Hym. B. M. iv. p. 251 (1856), ♂ ♀.

Harpactopus australis Sauss. Reise Novara, Zool. ii. p. 42 (1867), ♀.

I cannot agree with Kohl in treating these forms as different. The extreme specimens of a series show considerable difference in the sculpture on the mesopleuræ, but intermediate forms, of which the type of *globosus* is one, seem to occur. The pile on the sides of the abdominal segments seems to be present in all fresh specimens, and the brown margin of the abdominal segments is variable, almost absent in the type. I have not seen any specimens exceeding 17 mm. in length.

SPHEX (ISODONTIA) ABDITUS Kohl, st. NUGENTI, st. n.

♀. Differs from the typical form in the following details:—the second joint of the flagellum is distinctly longer than the third, the punctures on the thorax are very shallow, the pubescence on the thorax and median segment is black, erect, and sparse, and the apical joint of the tarsi is ferruginous, leaving only the coxæ and trochanters black on the legs.

Length 19 mm.

Hab. Cairns, Q.

Kohl gives the locality Sikkim, but expresses doubt as to the correctness of the information. In my opinion *abditus* is scarcely distinct from *aurifrons* Sm. from Aru, the latter species differing in the testaceous margins of the abdominal segments which are also slightly pruinose. In Queensland the present form seems to be very scarce and has not been previously recorded.

SPHEX VESTITUS Sm.

Sphex vestita Sm. Cat. Hym. B. M. iv. p. 248 (1856), ♀.

Sphex prætecta Sm. Brenchley's Cruise of the 'Curaçoa,' p. 461 (1873), ♀.

Sphex imperialis Kohl, Ann. Naturh. Hofmus. Wien, v. p. 398 (1890), ♀.

This is very near *cognatus* Sm., but where they occur together the female *cognatus* has the wings flavo-hyaline at the base, and the pubescence on the median segment is much paler in both sexes. The male genitalia are also different, the eighth ventral segment being produced into a point in *cognatus*, whilst in *vestitus* it is deeply longitudinally grooved beneath and not pointed; the petiole is somewhat longer in *cognatus*, and it is a much smaller species than *vestitus*. Kohl gives *prætecta* as a synonym of *formosus*, but this is not correct.

Hab. Gayndah, Q. (*Kohl*); Mackay and Cairns, Q. (*Turner*).

SPHEX COGNATUS Sm.

Sphex cognata Sm. Cat. Hym. B. M. iv. p. 248 (1856), ♀.

Sphex opulenta Sm. Cat. Hym. B. M. iv. p. 250 (1856), ♂.

Sphex formosa Sm. Cat. Hym. B. M. iv. p. 254 (1856), ♀.

Kohl gives *opulenta* as a synonym of *umbrosus*, but it is quite distinct from that species.

Hab. Australia (the northern half); Ceram; Semaol Isl.

SPHEX MODESTUS Sm.

Sphex modesta Sm. Cat. Hym. B. M. iv. p. 248 (1856), ♀.

Sphex dolichocerus Kohl, Ann. Naturh. Hofmus. Wien, v. p. 390 (1890), ♂.

Sphex bannitus Kohl, Ann. Naturh. Hofmus. Wien, x. p. 62 (1895), ♀.

As Kohl suggests, his *bannitus* is undoubtedly a synonym of *modestus*, and I consider that *dolichocerus* is almost certainly the male of the same species. In all three descriptions the locality given is only Australia, but there is a series in the British Museum from Alexandria in the Northern Territory, and it is also in the collection sent by Mr. Giles from Perth.

SPHEX BILOBATUS Kohl.

Sphex canescens Sm. Cat. Hym. B. M. iv. p. 246 (1856), ♂ ♀.

Sphex bilobatus Kohl, Ann. Naturh. Hofmus. Wien, x. p. 59 (1895), ♂ ♀.

The name *canescens* having been previously used by Dahlbom is a synonym of *S. viduatus*, and Kohl's name should be used.

Hab. Adelaide (Kohl); Cumberland, N.S.W.

SPHEX GRATIOSISSIMUS Dalla Torre.

Sphex nitidiventris Sm. Journ. Proc. Linn. Soc., Zool. iii. p. 158. n. 4 (1858), ♀ (*nec* Spinola, 1851).

Sphex graciosus Sm. Journ. Proc. Linn. Soc., Zool. iii. p. 158. n. 6 (1858), ♂ (*nec* Smith, 1856).

Sphex gratiosissimus D. T. Cat. Hym. viii. p. 424 (1897), ♂.

Sphex wallacei Turn. Proc. Zool. Soc. 1908, p. 467, ♀.

As *graciosus* and *nitidiventris* are sexes of the same species, Dalla Torre's name stands. It is very near *resplendens* Kohl, but as I have not seen Amboina specimens I cannot be sure that they are identical.

CERCERIS GILESI, sp. n. (Plate XXXII. fig. 13, ♂.)

♀. Clypeus sparsely but rather coarsely punctured, the middle lobe almost semicircular but broader at the apex than long, broadly but rather shallowly emarginate at the apex, the angles of the emargination produced into very short blunt teeth, with another more acute tooth on each side beyond the emargination. Antennæ inserted near together, separated from the base of the clypeus by a distance equal to two-thirds of the length of the middle lobe of the clypeus; the first joint of the flagellum globular, the second joint a little longer than the third, the apical joint subconical, a little longer than the tenth. Inner margins of the eyes slightly divergent towards the clypeus, separated from each other at the nearest point by nearly two and a half times the length of the scape. Posterior ocelli about half as far again from the eyes as from each other. The whole insect coarsely and closely punctured; the punctures on the mesonotum more or less

confluent longitudinally. The triangular space at the base of the median segment is almost smooth in the middle and at the apex, obliquely striated at the basal angles and divided by a deep longitudinal median sulcus. Petiole short, nearly twice as broad as long; pygidial area elongate-ovate, truncate at the apex, coarsely punctured at the base, smooth at the apex.

Black; the clypeus, interantennal carina, mandibles, the face as high as the base of the antennæ and extending to the eyes, only narrowly separated from the interantennal carina, the scape, flagellum beneath, a broad transverse band narrowly interrupted in the middle on the pronotum, tegulæ, a transverse band at the apex of the scutellum, postscutellum, two basal abdominal segments, the dorsal surface of the fifth segment, and the legs bright reddish orange. Wings hyaline, the fore wings clouded with fuscous along the costa, nervures black.

Length 11 mm.

♂. Differs from the female in the form of the clypeus which is longer and not emarginate at the apex, the narrower front and the more nearly parallel sides of the pygidial area, which is also more strongly punctured towards the apex. The fifth, sixth, and seventh dorsal segments are orange—not only the fifth, as in the female—and the clypeus and front are yellow.

Hab. Claremont, W. A. (*H. M. Giles*). December.

CERCERIS MINUSCULA, sp. n.

♀. Clypeus rather sparsely punctured, the middle lobe broadly and shallowly emarginate at the apex, not toothed, slightly narrowed towards the apex, a little shorter than the greatest breadth. Antennæ separated from the base of the clypeus by about two-thirds of its length; the third joint of the flagellum as long as the second, the apical joint stout and subconical, longer than broad. Posterior ocelli more than half as far again from the eyes as from each other; inner orbits of the eyes nearly parallel, separated by a distance equal to more than two and a half times the length of the scape. The whole insect closely and deeply punctured, the triangular space at the base of the median segment transversely striated. Petiole broader than long, narrowed a little to the base and the apex; pygidial area elongate-ovate, narrowly rounded at the apex, finely punctured.

Black; mandibles (except at the apex), clypeus, the sides of the face broadly as high as the base of the antennæ, the scape beneath, the frontal carina, a transverse spot on each side of the pronotum, postscutellum, the sides and apex of the third dorsal segment of the abdomen, the sides of the third ventral segment, and the sides and apex of the fifth dorsal segment, pale dull yellow; the scape above, the flagellum, tegulæ, petiole, the extreme apical margin of the second dorsal segment, the base of the third, and the pygidium, dull ferruginous. Intermediate and anterior tibiæ yellow above, posterior tibiæ yellow beneath; intermediate and anterior femora, the apex of the posterior femora, the tibiæ

(excluding the yellow parts), and the tarsi ferruginous. Wings hyaline with a faint fuscous cloud at the apex, nervures black.

Length 7-8 mm.

♂. Similar to the female, but the clypeus is toothed at the apex and not emarginate, the third joint of the flagellum is distinctly longer than the second, the striæ on the triangular space at the base of the median segment are less distinct, the sides of the pygidial area are almost parallel and it is narrowly truncate at the apex; the sixth dorsal segment and a transverse band at the base of the second are yellow, the petiole black, the tegulæ yellow, and yellow replaces the ferruginous colour on the anterior and intermediate legs.

Length 6-7 mm.

Hab. Mackay, Q. (*Turner*); Townsville, Q. (*Dodd*); Hermannsburg, Central Australia (*Hillier*). February to April.

TACHYSPEX SUBOPACUS, nom. n.

Tachyspex debilis Turn. Proc. Zool. Soc. 1908, p. 490 (*nec* Perez, 1907).

Key to the Australian Species of Tachytes.

♀ ♀.

- A. Abdomen red or testaceous red.
 - a. Abdomen red. Head and thorax black, without pile *T. rubellus* Turn.
 - b. Abdomen testaceous red. Thorax covered with golden pile *T. formosissimus* Turn.
- B. Abdomen black.
 - a. Pile of abdomen golden.
 - a². Tibiæ and tarsi black. Length 20 mm. *T. plutocraticus*.
 - b². Tibiæ and tarsi ferruginous. Length 14 mm. . . . *T. approximatus* Turn.
 - b. Pile of abdomen silver.
 - a². Stiff pubescence on pygidial area golden..... *T. tarsatus* Sm.
 - b². Pubescence on pygidial area silver *T. australis* Sauss.

I am not sure that my identification of *australis* is correct, the description being poor and of the male only. I have not been able to recognise *T. tachyrrhostus* Sauss., of which the male only has been described. *T. australis* Sauss. 1854 seems to be a *Larra* and certainly does not belong to *Tachytes*.

TACHYTES TARSATUS Sm.

Tachytes tarsatus Sm. Cat. Hym. B. M. iv. p. 297 (1856), ♀.

Hab. Mackay and Cairns, Q. Also from India.

I think I am correct in my identification of this species, but I have not seen the type, and the species run very close in this genus.

TACHYTES PLUTOCRATICUS, sp. n.

♀. Clypeus very broadly rounded at the apex, finely and closely punctured, the apical margin strongly raised, with a narrow transverse depression before it. Head and clypeus clothed with rather long, close, cinereous pubescence, which changes to silver-white in some lights; the head finely and

closely punctured. Second joint of the flagellum almost as long as the first and third combined. Eyes separated on the vertex by a distance almost equal to the length of the second joint of the flagellum. Thorax very finely and closely punctured; the mesonotum margined with shining silvery pubescence on the sides above the tegulæ; the scutellum with a delicate median sulcus. Median segment very delicately punctured-rugulose, narrowed to the apex and very steeply sloped posteriorly, with a large triangular puncture at the apex and a longitudinal sulcus on the posterior slope, the dorsal surface thinly clothed with cinereous pubescence, the sides and the mesopleuræ more closely clothed with greyish-white pubescence. Six spines on the basal joint of the anterior tarsi, including the apical spine. Abdomen clothed with rather pale golden pile, thickest and brightest on a broad band at the apex of each segment and on the pygidial area, which is elongate-triangular, very narrowly rounded at the apex. The third cubital cell is very long on the cubital nervure, approaching as near as half its own length to the outer margin of the wing, and about equal in length to the second on the radial nervure.

Black; the tegulæ, the spines of the tibiæ and tarsi, and the apical margin of the abdominal segments (broadly on the dorsal, very narrowly on the ventral surface) testaceous. Wings pale flavo-hyaline, nervures pale ferruginous.

Length 19 mm.

Hab. Townsville, Q. (*F. P. Dodd*). January.

This fine species is nearly related to *monetarius* Sm., from which it differs in the narrower pygidial area, the greater length of the third cubital cell on the cubital nervure, and the paler colour of the wings and of the pile on the abdomen. The sulcus on the scutellum is absent in the type of *monetarius*, which is from North India. The species has a wide range in Africa, but in specimens I have seen from West Africa the eyes approach each other more closely on the vertex than in the typical form, and the pygidial area is narrower as in the Australian species.

SPHODROTES CYGNORUM, sp. n.

♀. Mandibles very deeply and rather widely excised on the outer margin. Clypeus very broadly rounded anteriorly. Head, thorax, and abdomen closely and coarsely punctured, the punctures on the abdomen finer than on the thorax. Inner margins of the eyes diverging very slightly towards the clypeus; posterior ocelli nearly as far from each other as from the eyes; the posterior margin of the head broadly emarginate. Pronotum much narrower than the head, narrowed and steeply sloped anteriorly. Median segment much broader than long, very coarsely rugose, longitudinally striated at the base, almost vertically truncate posteriorly, the surface of the truncation coarsely rugose, the sides of the segment coarsely obliquely striated. Abdomen broad at the base, narrowed and pointed at the apex, the first segment

rounded at the anterior angles, the second segment very large, a little broader than the first; the apical segments narrowing rapidly; the sixth segment small, narrowly triangular, pointed and sparsely punctured, smooth and shining beneath.

Opaque black; the legs (except the coxæ), the tegulæ, and the apex of the scape ferruginous; mandibles fuscous. Wings hyaline, clouded with fuscous, nervures fuscous.

Flagellum missing. The neuriation is as in Kohl's figure of *S. punctuosus*, but the third cubital cell is much shorter on the radial nervure, the third abscissa of the radius being little more than half as long as the third transverse cubital nervure; the radial cell is rounded at the apex, not appendiculate.

Length 10 mm.

Hab. Claremont, W. A. (*H. M. Giles*).

Very near *punctuosus* Kohl, which was described from a male, and I should have hesitated to separate the present species but for the marked difference in the shape of the third cubital cell, which is not likely to be sexual.

NYSSON (*ACANTHOSTETHUS*) *OBLITERATUS*, sp. n.

♂. Clypeus produced in the middle over the mandibles and truncate at the apex, strongly transversely depressed at two-thirds from the base, the depressed apical portion microscopically punctured, the raised basal portion sparsely punctured and produced at the apical angles into very short carinæ bordering the depressed portion at the base. Eyes converging towards the clypeus, separated on the vertex by a distance at least half as great again as that separating them on the clypeus; the posterior ocelli as far from each other as from the eyes. Head rather shallowly punctured-rugose, covered with short white pubescence, close on the clypeus, sparse elsewhere; a transverse carina on the front, nearer to the base of the antennæ than to the anterior ocellus, not reaching the eyes, slightly pointed in the middle and produced into a strong longitudinal carina reaching to the base of the clypeus. Antennæ gradually thickened to the apex, the second joint of the flagellum the longest, a little longer than the apical joint. Thorax coarsely punctured-rugose, the anterior margin of the pronotum broadly arched, the anterior angles of the propleuræ with a minute spine. Scutellum and median segment longitudinally striate-rugose; the scutellum almost flat; the apical angles of the median segment produced into stout spines, the surface of the posterior truncation longitudinally striated at the base, then reticulate; the sides of the segment indistinctly obliquely striated. Abdomen ovate, broadly truncate at the base, rather closely punctured, coarsely on the basal segment, more finely on the second and third segments, the punctures on the apical segments more or less confluent longitudinally; the apical dorsal segment much broader than long, rather narrowly truncate at the apex.

Opaque black; the first dorsal segment of the abdomen dull

ferruginous; a short transverse line on each side at the apex of each of the three basal dorsal segments yellowish white; mandibles, apex of the scape, anterior tibiæ and tarsi, and the apical joints of the posterior tibiæ and tarsi ferruginous brown; the depressed apex of the clypeus testaceous. Wings pale fusco-hyaline, nervures black.

The second cubital cell is petiolate; second recurrent nervure interstitial with the first transverse cubital nervure.

Length 9 mm.

Hab. South Perth, W. A. (*H. M. Giles*).

This seems to differ too much from *basalis* Sm. to be the opposite sex of that species; the second cubital cell in *basalis* is pointed on the radial nervure but not petiolate, and the sculpture differs considerably.

BEMBEX CURSITANS Handl.

Bembex cursitans Handl. Sitzber. Akad. Wiss. Wien, cii. p. 762 (1893), ♂ ♀.

Hab. South Perth, W. A. (*H. M. Giles*).

BEMBEX FURCATA Erichs.

Bembex furcata Erichs. Arch. f. Naturges. viii. 1, p. 266 (1842).

Hab. The southern coast of Australia from Perth to Sydney; Tasmania.

BEMBEX FLAVIVENTRIS Sm.

Bembex flaviventris Sm. Ann. Mag. Nat. Hist. (4) xii. p. 299 (1873), ♂ ♀.

? *Bembex calcarina* Handl. Sitzber. Akad. Wiss. Wien, cii. p. 754 (1893), ♂.

The dilated spur of the anterior tibiæ in *flaviventris* answers well to Handlirsch's figure. The type answers to the description of *calcarina*, but none of the bands on the six basal dorsal segments are interrupted and the postscutellum is also banded with colour. Handlirsch does not notice the structure of the apical joint of the intermediate tarsi, which is very slender at the base, long, and broadened at the apex.

BEMBEX MACKAYENSIS, sp. n.

♂. Clypeus strongly convex, not flattened in the middle. Antennæ inserted as near to each other as to the eyes, the apical joint of the flagellum curved at the apex, joints 8-11 very feebly spined beneath. Eyes very slightly divergent towards the clypeus. Anterior tarsi normal, the basal joint with six spines on the outer margin; intermediate femora not serrate, the spurs of the intermediate tibiæ distinct. Seventh dorsal segment of the abdomen narrowly rounded at the apex, the sides slightly sinuate; second ventral segment with a large, curved, longitudinal tubercle which is broadly truncate at the apex; sixth segment armed with a large, flattened, triangular plate; seventh small,

with a longitudinal carina; eighth segment with a well-developed apical spine. Finely and closely punctured; the head, thorax, and base and sides of the abdomen covered with short grey pubescence, the second ventral segment shining and more sparsely punctured.

Black; the labrum (except on the sides and apex), the apical half of the clypeus, an obscure curved line on each side of the ocelli, the anterior and intermediate tarsi, tibiae above, femora at the apex above, base of the posterior tibiae and the outer orbits of the eyes very narrowly yellow; a narrow curved band, broadly interrupted in the middle on dorsal segments 2-5, and a spot on each side of the second and third ventral segments whitish. Wings hyaline, nervures fuscous. One very short vein springs from the apex of the median cell of the hind wing.

Length 12 mm.

♀. Sixth dorsal segment very narrowly rounded at the apex, sparsely punctured and without a median area. Clypeus black, the apical margin very narrowly yellow; labrum yellow, black at the extreme apex; scape beneath, posterior margin of the pronotum, propleuræ, a spot on the mesopleuræ, a short narrow line on each side of the disc of the mesonotum, and a small spot on each side of the scutellum yellow; a transverse spot on each side of the first abdominal segment and a minute one on each side nearer the middle dull creamy white. Otherwise marked as in the male, but the abdominal bands are broader.

Hab. Mackay and Cairns, Q. (*Turner*). 3 ♂, 1 ♀. October and December.

Very near *tuberculiventris* Turn., but in that species the anterior tarsi have eight spines and the seventh ventral segment is different. The colour also differs considerably, especially on the ventral surface of the abdomen, which is black in the present species. Also allied to *flavipes* Sm.

BEMBEX FLAVIPES Sm.

Bembex flavipes Sm. Cat. Hym. B. M. iv. p. 325 (1856), ♀.

♂. The seventh, eighth, ninth, and tenth joints of the flagellum are slightly produced at the base beneath, the eleventh is broadened and flattened above and produced into a tubercle beneath, the apical joint is sharply curved and terminates in an acute spine. The three basal joints of the anterior tarsi are broadened, but not strongly so. The tubercle of the second ventral segment is truncate at the apex, resembling that of *B. tuberculiventris* Turn. in form, and the sixth ventral segment is armed with a triangular plate. Intermediate femora not serrate. The clypeus is white and is very prominent at the base, then almost vertically truncate to the apex, the extreme base is black.

Hab. Mackay, Q. (*Turner*). ♂ ♀. October.

Allied to the group *musca* Handl., and most nearly related to *tuberculiventris* Turn.

BEMBEX LITTORALIS Turn.

Bembex littoralis Turn. Proc. Zool. Soc. 1908, p. 502, ♂.

This is very near *B. musca* Handl. and may prove to be identical, but the antennæ in *musca* seem to be rather different. The species in this group seem to be very close to each other.

BEMBEX ATRIFRONS Sm.

Bembex atrifrons Sm. Cat. Hym. B. M. iv. p. 327 (1856), ♀.

? *Bembex flavilabris* Sm. Ann. Mag. Nat. Hist. (4) xii. p. 299 (1873), ♀.

I can see no difference between *atrifrons* and *flavilabris*, except in the greater development of the markings on the latter.

The male has the labrum black; the eighth joint of the flagellum slightly produced at the base, the three following joints feebly spined beneath at the apex; anterior tarsi with a row of well-developed black lobes on the outer margin; intermediate femora emarginate and serrate in the middle beneath; second ventral segment with a large, compressed, curved, longitudinal tubercle, third segment with a faint longitudinal carina, sixth segment unarmed.

Hab. South Perth, W. A. (*H. M. Giles*). December and January.

BEMBEX FUNEBRIS, sp. n.

♂. Mandibles with one tooth on the inner margin; labrum longer than the mandibles, shining, very finely and sparsely punctured. Clypeus convex, with very short, fine pubescence. Antennæ inserted as far from the eyes as from each other; the second joint of the flagellum about half as long again as the third, the seventh emarginate at the apex beneath, the eighth with a small spine at the base beneath; a low longitudinal carina between the antennæ. Inner margins of the eyes almost parallel, diverging very slightly towards the clypeus. Basal joint of the anterior tarsi not thickened, feebly lobed on the outer margin, with seven spines; intermediate femora rather feebly serrate beneath. Abdomen rather slender; the second ventral segment with a compressed, moderately elevated, longitudinal tubercle, not curved at the apex; the third segment subcarinate longitudinally; seventh and eighth segments longitudinally carinate, the eighth with a short apical spine. Seventh dorsal segment broad, very broadly rounded at the apex. Finely and closely punctured.

Black; a spot at the base of the scape, the tibiæ beneath, the anterior tarsi beneath at the base, and the femora beneath at the apex pale yellow. A very short and very narrow transverse band, sometimes entirely absent, on each side of the second and third dorsal segments pale greenish grey. Wings hyaline, tinged with fuscous, nervures black.

There is a delicate, longitudinal, median carina on the anterior half of the mesonotum.

Length 17 mm.

Hab. South Perth, W. A. (*H. M. Giles*). 3 ♂. January.

Very near *atrifrons* Sm., but differs in the more even serration of the intermediate femora, which in this species is continued from the apex almost to the base, whereas in *atrifrons* the apical half is not serrate and the extreme base is rather abruptly broadened and also smooth. In *atrifrons* the lobes of the basal joint of the anterior tarsi are more strongly developed and the seventh dorsal segment is more narrowly rounded at the apex.

BEMBEX AUREOFASCIATA, sp. n. (Plate XXXII. fig. 14, ♂.)

♂. Mandibles with one tooth on the inner margin; labrum longer than mandibles, smooth, and without a sulcus. Clypeus convex, somewhat flattened in the middle, covered with very short, delicate, white pubescence. Inner margins of the eyes parallel; the antennæ inserted a little further from each other than from the eyes, the scape rather stout; second joint of the flagellum nearly as long as the third and fourth combined, none of the joints emarginate, spined, or hollowed. Anterior tarsi not thickened; the basal joint with six spines on the outer margin including the two apical spines, the outer margin very feebly lobed and narrowly margined with black; intermediate femora serrate beneath; intermediate tibiæ with the apical spines well developed. First ventral segment with a longitudinal carina at the base; the second segment with a very strong longitudinal carina, which is rounded, curved, and very prominent at the apex, very similar in shape to that of *B. musca* Handl. Sixth ventral segment not modified, the eighth ending in an acute apical spine. Seventh dorsal segment rounded at the apex. Closely and finely punctured; the head, thorax, and base of the abdomen with cinereous pubescence.

Black; the mandibles (except at the apex), labrum, clypeus, the extreme base of the scape, pronotum, tegulae, the scutellum (except in the middle), postscutellum, femora, tibiæ and tarsi, a broad band at the base of the first dorsal segment of the abdomen, a narrow band at the apex of the first ventral segment, a broad band on the middle of the second segment above and beneath marked with a small black spot on each side on the dorsal surface, and a narrower band emarginate on each side anteriorly on the third dorsal segment, orange-yellow. Wings pale fusco-hyaline, clear hyaline at the apex, nervures fuscous.

Length 16 mm.

Hab. South Perth, W. A. (*H. M. Giles*). January.

Allied to *B. atrifrons* Sm., but in that species the seventh and eighth joints of the flagellum are not normal and there is a seventh spine on the basal joint of the anterior tarsi; the colour is very different, being in *aureofasciata* of the orange shade which is characteristic of many Australian Aculeates, but which does not occur, so far as I know, in any other species of *Bembex*.

Genus *AUCHENOPHORUS* Turn.

Auchenophorus Turn. Ann. & Mag. Nat. Hist. (7) xix. p. 270 (1907).

I was quite wrong in considering this genus as in any way related to the *Ampulex* section of the family. The true affinity is with *Nitela*, with which the neururation agrees fairly well, but the radial cell is not appendiculate and the cubitus of the hind wing originates further from the transverse median nervure; in these points agreeing with *Nitelopectus* Ashm. In that genus, however, the mandibles are deeply emarginate on the outer margin. The species of *Auchenophorus* resemble Mutillidæ, with which the female of *A. fulvicornis* was taken at Cairns, running on the ground with closed wings in localities where females of *Ephutomorpha* were plentiful.

Type of genus, *A. coruscans* Turn. (Plate XXXII. fig. 15, ♀.)

PISON PERPLEXUM Sm.

Pison perplexus Sm. Cat. Hym. B. M. iv. p. 314 (1856), ♂.

♀. Clypeus rather strongly advanced in the middle anteriorly, the anterior margin undulating at the sides, the produced apical portion smooth, the remainder closely and finely punctured. Head opaque, very minutely punctured, with a short longitudinal carina on the front; the eyes half as far again from each other on the clypeus as on the vertex; antennæ inserted nearer to each other than to the eyes; the second joint of the flagellum scarcely longer than the third. Pronotum rounded at the anterior angles. Thorax very finely and closely punctured. Median segment very finely and closely obliquely striated, punctured between the striae, a longitudinal sulcus from the base to the apex in which lies a low carina. Abdomen opaque, very minutely punctured, the segments depressed on the apical margin and bordered with fine silver pubescence. Second cubital cell half as high as the third, receiving the two recurrent nervures near the base and very close to the apex.

Black; the tegulae testaceous at the apex. Wings fusco-hyaline; nervures black.

Length 12 mm.

Hab. South Perth, W. A. (*H. M. Giles*). January.

Easily distinguished from the allied species by the shape of the clypeus, which is broadly rounded in *fuscipennis* Sm., and much less produced in *spinolæ* Shuck. The type is a male in which the second joint of the flagellum is much longer than the third. The clypeus of the male is produced into a point; but I think I am right in placing the female described above with *perplexum*.

PISON ARGENTATUM Shuck.

Pison argentatum Shuck. Trans. Ent. Soc. London, 1837, p. 79.

Pison ignavum Turn. Proc. Zool. Soc. 1908, p. 511.

The median segment in *ignavum* is more strongly striated than in the typical form, but the difference is not sufficient to be of full specific value.

EXPLANATION OF THE PLATES.

PLATE XXXI.

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| <p>Fig. 1. <i>Rhagigaster corrugatus</i>, sp. n. ♂.</p> <p>2. <i>Rhagigaster corrugatus</i>, sp. n. ♀.</p> <p>3. <i>Eirone ferrugineicornis</i>, sp. n. ♂.</p> <p>4. <i>Gymnothynnus</i> (?) <i>trianguliceps</i>, sp. n. ♀.</p> <p>5. <i>Hemithynnus petulans</i> Sm. ♂.</p> <p>6. <i>Hemithynnus petulans</i> Sm. ♀.</p> <p>7. <i>Oncorhynchus xanthospilus</i> Shuck. ♀.</p> <p>8. <i>Æolothynnus crenulatus</i>, sp. n. ♂.</p> | <p>Fig. 9. <i>Pogonothynnus vestitus</i> Sm. ♂.</p> <p>10. <i>Pogonothynnus vestitus</i> Sm. ♀.</p> <p>11. <i>Zaspilothynnus radialis</i>, sp. n. ♂.</p> <p>12. <i>Zaspilothynnus gilesi</i>, sp. n. ♂.</p> <p>13. <i>Zaspilothynnus gilesi</i>, sp. n. ♀.</p> <p>14. <i>Zaspilothynnus clelandi</i>, sp. n. ♂.</p> <p>15. <i>Zaspilothynnus clelandi</i>, sp. n. ♀.</p> |
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PLATE XXXII.

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| <p>Fig. 1. <i>Ephutomorpha gilesi</i>, sp. n. ♂.</p> <p>2. <i>Ephutomorpha gilesi</i>, sp. n. ♀.</p> <p>3. <i>Ephutomorpha perelegans</i>, sp. n. ♀.</p> <p>4. <i>Anthobosca gilesi</i>, sp. n. ♂.</p> <p>5. <i>Pseudagenia fasciata</i> Fabr. ♀.</p> <p>6. <i>Cryptocheilus darwinii</i>, sp. n. ♀.</p> <p>7. <i>Anoplius atavus</i>, sp. n. ♀.</p> <p>8. <i>Anoplius senex</i>, sp. n. ♀.</p> | <p>Fig. 9. <i>Planiceps aureovestitus</i>, sp. n. ♀.</p> <p>10. <i>Ceropales tenuatus</i>, sp. n. ♀.</p> <p>11. <i>Paracrabro froggatti</i> Turn. ♀.</p> <p>12. <i>Ammophila</i> (<i>Parapsammophila</i>) <i>eremophila</i>, sp. n. ♂.</p> <p>13. <i>Cerceris gilesi</i>, sp. n. ♂.</p> <p>14. <i>Bembex aureofasciata</i>, sp. n. ♂.</p> <p>15. <i>Auchenophorus coruscans</i> Turn. ♀.</p> |
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2. Descriptions of new LYCÆNIDÆ and HESPERIIDÆ from Tropical West Africa. By HAMILTON H. DRUCE, F.L.S., F.Z.S., &c.

[Received December 13, 1909.]

(Plates XXXIII.-XXXV.* and Text-fig. 36.)

The following descriptions are of new forms of butterflies contained in the rich collections recently made by Mr. G. L. Bates in the Cameroons and by Mr. P. Landbeck in the upper Kasai district of the Congo.

LYCÆNIDÆ.

TELIPNA TRANSVERSTIGNA, sp. n. (Plate XXXIII. fig. 2, ♀.)

Female. Upper side: both wings dark orange-red with black apices and margins. Fore wing with a large pure white subapical patch. Under side pale brownish yellow, with the usual black markings and white spots, and in addition to these on the hind wing, arising from the base and from the anal margin near the base, are two prominent black bars running almost at right angles to the black costal bars.

Expanse $2\frac{1}{10}$ inches.

* For explanation of the Plates see p. 378.